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ORIGINAL ARTICLES.

THE MECHANISM OF PNEUMONIA; AND ITS TREATMENT.

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The two objects of this paper are, *first*, an inquiry into the initial causes of pneumonia; and *secondly*, the treatment of the disease.

In order to demonstrate what may be termed the "Mechanism of Pneumonia" in a manner deemed necessary for the purpose of this paper, a few words concerning the anatomical arrangement of the parts must be said.

First, as to the definition of pneumonia itself. Since the crepitant râle was discovered, and its significance explained, it has been believed by auscultators that pathological changes may occur on one side only of the dividing membrane or partition of the lungs, whilst at the same time, upon the other side of this membrane, there may, at the beginning of the trouble, be but little or no disease. It is further believed, that by means of this râle, the diseases on the one side of this partition in the lungs can be distinguished from those upon the other side.

The wonder of this achievement is all the greater, because this dividing or partition wall is neither thick nor straight, but ramifies in the most zigzag manner throughout the planes of the lungs in all directions. It is somewhat a stretch of the imagination to call it a wall or partition, as it is a microscopic picture, yet none the less effective to fulfil its intention. For the practical purpose in view it may be thus described:

When one takes a deep inhalation, the air goes towards the minute bronchi, and empties into the stationary air space which fills the alveoli and infundibula of the lungs. We know that the heart is beating, and that the minute branches from the pulmonary artery are winding around and around the partitions of these alveoli and infundibula in an interweaving and spiral manner; so that, upon this side (the air side), we have the air, and, to use a Saxon word, on "yonder" side we have the blood in its vessels—and we cannot strictly say on yonder side either—because the intertwining, plaited arrangement of the vessels puts the blood on both sides.

It is this dividing wall, such as it is, which stands as a basis of the classification of the diseases of the lungs into two distinct varieties. These are diagnosed by different sounds and symptoms; and, notwithstanding the minuteness of the wall, they are, at present, treated upon entirely different principles, and with different remedies. It must be remembered, also, that the air from the outside, in all its variations of quality and temperature, is in communication with the blood on the inside only as it is contained in its vessels; and these vessels are arranged on the air cells, in a system of capillaries which, although not the most minute, are more numerous than in any other part of the body. It is the changes in these capillaries that are to be considered. When they are congested or inflamed; this is pneumonia.

There are twenty-five diseases of the lungs and air-passages now described. Seventeen of these are described as occurring upon the air-side or external to this partition wall; six as occurring across its border, or upon the inside of it; and in the remaining two, as the double nomenclature indicates, the wall membrane itself is involved in the disease with its adjacent lung substance on both sides. The lungs are therefore exposed to causes of disease from without as well as from within, and for this reason, it may be, their diseases, far above all others, are the most destructive to human life. The statistics of one of them alone (consumption) claims for it the first place upon the mortuary list, and for another, pneumonia, there is claimed the second place in the mortuary list, in some situations.

Nothing more need be said concerning the importance of the study of the disease now under consideration than that, for every man in this room over 65 years old, according to the statistics, if he dies of any acute disease, there are nine chances in ten that he will die of pneumonia. Hence the further study of this disease claims attention. It is generally admitted that there must be something wrong, in this country at least, about its treatment, its statistics or its study, because, it is said, there are now a greater proportionate number of cases, and a larger mortality, than there

were forty years ago,[1] and this is not the case in England. Should this indeed be the fact in our country, if now, in this paper, a deviation from the beaten road along which the disease has been observed so long should be attempted, so that it may be viewed from a different standpoint and approached in a new way, let us hope that some good may result; particularly if that way should fortunately prove trustworthy and direct.

The term "mechanism of pneumonia" has not hitherto been used by those who have described and explained the nature of this disease. The term has been used for other diseases of the lungs, as the mechanism of empysema,[2] etc. It is a good term, and may be used to convey something more than what is known as the etiology of the disease. and likewise something different from its morbid anatomy and pathological histology; indeed, it may stand intermediate between these two, in an attempt to connect them as cause and effect. By means of the term "mechanism of pneumonia" an attempt will be made to show, in a general way, how those different changes in the structure of the lungs are brought about which are recognized during life; which are demonstrated by the scalpel; are seen after death by the microscope; and are so minutely described by classical authors in their different departments. In order to do this, it is necessary to seek for the cause, or causes, which throw the blood from its natural healthy channels, and produce these effects, or changes. It is admitted that congestion of the capillaries is the first step in the process of pneumonia. It only remains, therefore, to show in what way this congestion may be produced. It will be admitted that if the *modus operandi* of the predisposing causes are made clear, viz., as to how they assist, and favor the production of pneumonia when they are brought into action by the exciting cause—then a study of this process may give many valuable suggestions in the management of this disease.

It may now be asked, What are really the exciting, and predisposing, causes of pneumonia? A better way of putting the question, however, at this time and under all the circumstances, may be, What are *not* the predisposing causes of pneumonia? In general terms it may be said, in the language of a modern author, "that all conditions which tend to impair the general health favor the occurrence of pneumonia."[3] If this be accepted as a medical aphorism, then the etiology of pneumonia would comprise a long list, and one too endless to be used at present. Yet some selection of these causes must be made, and in doing so, those *only* that are admitted to be the most frequent will be considered.

Amongst the recognized predisposing causes of pneumonia there are four, which are quite different from each other, and each one of them must produce the same effect, viz.: congestion in the capillaries, by a different mode of action. These are age, cold, malaria and alcohol.

What could be more different from one another than the four causes which have been enumerated? Two of them, at least, deteriorate the general health, each in its own way; but by what particular manner or mechanism, why, or how, any one, or all of them combined, become direct or predisposing causes of pneumonia, may be of interest to inquire, and to understand if we can.

As regards age, so much would have to be said for all periods of life, that it is impossible to treat of it now. It will be alluded to again in the treatment of the disease.

It is curiously doubted now by some of the most eminent physicians and pathologists, whether cold is as frequent a cause of pneumonia as it was at one time considered to be; or, indeed, whether it has any agency in causing the disease at all. This is, indeed, the great absorbing idea of the day, so far as this disease is concerned, and about which more must be said hereafter.

Fully appreciating the importance of pneumonia, on account of its increasing prevalence, its destructive crippling of health, and its large mortality, our American physicians are now quite dissatisfied with its present indefinite position, and the great desire seems to be to take it out of the catalogue of general diseases produced by common causes, and to rank it as a specific disease, having a bacterial origin. Croupous pneumonia is one of the most common diseases which affect the lungs. It is the type of all other classified pneumonias. Its symptoms, its course, its issues, are therefore very well known, and if *cold* be excluded from its causation we are more ignorant of its etiology than of any of its fellows. Yet, of it, one of the leading minds of the present day says: "Although several most trustworthy observations enable us to put down cold as its usual cause, this gives us no insight into the way in which the chill operates. For what has partial chilling of the skin to do with the inflammation of an internal organ?"[4] But inasmuch as the bacteria of pneumonia has not yet been found, what will now be said, as a contribution to its treatment, will be confined to cold, malaria and alcohol, as its exciting and predisposing causes.

And first as to cold. When speaking of it, the phrase "taking cold" must not be confounded with the word *cold* when used as an adjective, as in designating a cold wave, cold weather, etc. In this sense the word *cold* is simply used as an adjective. But the phrase "*taking cold*," conveying the idea that a diseased condition, or a morbid action, is brought by this means into the system, is such an integral part of the nursery catechism that no one will be inclined to doubt the fact. It

[1] Henry H. Hartshorne, M.D. Pneumonia, Its Mortality and Treatment, p. 5.

[2] Rindfleisch. Path. Histology, vol. ii, p. 5.
[3] T. Henry Green. Path. and Morbid Anatomy, p. 364.
[4] Rindfleisch. Pathol. Histology, vol. ii, p. 55.

is an expression used alike by physicians and patients; it is accepted as a truth amongst the earliest impressions of life; it has been felt by every one in their own persons, and is known as a phrase in every language, from the earliest to the latest. It is found in the Hebrew, Greek, Latin, and all written modern languages and, according to some good authorities, in the languages of our Indian tribes. When used in connection with pneumonia it will be well to be quite precise as to its exact significance, because, if "taking cold" does predispose to, or can directly cause this disease, it is surely well to hold on to the truth in this matter; for it is plain, if "taking cold" does produce it at all, it must accomplish it by some mechanism, or by some order of action. Practically, it is within the scope and bearing of the term "mechanism of pneumonia" to reason upon the process of "taking cold" somewhat in this way:

A patient, having been exposed in a cold place to a continuation of cold air, gets thoroughly chilled; and in this condition, by continuing to inhale the cold air, the already chilled blood in the pulmonary capillaries gets yet more thoroughly chilled by cold applied from without and within, until finally, at various points along the partition walls of the lungs the circulation, becoming slower, is at length checked, and a stasis, or obstruction, results in the network of capillaries, which are spread out so numerously over the air vesicles. These points of obstruction increase with each round of the circulation, until ultimately a large portion of the lung may become involved, and the internal or blood side of the membrane becomes more or less rapidly engorged—giving the first stage of pneumonia.

Notwithstanding the assertions of many to the contrary, yet, it is a fact, that almost every case of pneumonia that comes before the clinician, has a history of some exposure to cold like this, and there are some reasons why a process similar to this may be looked upon as a simple mechanism, or cause, by which the lung membrane can become engorged or blocked at the point in question. A few of the reasons why this may be accepted as a fact are as follows: In theory, at least, it is in accordance with the laws governing the circulation of the blood in the body; it is tantamount in effect to the law or doctrine once held by the profession concerning a spasm of the capillaries; it is plausible, and not contrary to reason. If the pneumonia does result from cold, it must do so by some mechanism. The parts are there as they have been described; the bronchial terminals, the alveoli, the infundibula, the intertwining arterioles and the numerous capillaries filled with blood; if these parts are quickly changed from a state of activity and health, to that of disease, by cold, how else can it have been done except by stopping the circulation in the capillaries in a manner similar to the one explained? Should this be asserted as a doctrine, it would be a ready explanation for a diseased condition, concerning which there has been, and is yet, a controversy which seems to be interminable, and concerning which the wanted bacterial cause is not to-day considered a solution.

A celebrated pathologist of the present day describes what he calls "the initial steps of the textural alterations in catarrhal pneumonia as follows: "The alveolar epithelia swell," he says, "and produce a thick and continuous layer of protoplasm which is detached from the wall of the alveoli in transverse sections as a nucleated band. The individual cells then separate; the nuclei divide; and active corpuscular proliferation sets in; large spheroidal cells with vesicular nuclei are produced; these cannot be otherwise described than as epithelial elements; they proceed to fill the alveoli, spreading through the stagnant serum which these contain. The intensity of their corpuscular proliferation, the quantity of epithelial elements produced, determine the further course of the inflammation.[6]"

The mistake made in this description, from the point of view taken here, is, that these textural alterations are *not* initial. The mechanism of pneumonia, in order to be used to advantage as a basis of treatment, should have its starting point at least one step further backwards than the textural changes as they are described by Colberg; with an endeavor to show what caused the congestion. Whether this is cold or not, makes a decided difference in treatment. It may be a matter of regret that anything should prevent this explanation of the mechanism of cold in producing the engorgement of pneumonia, from being accepted, because a good system of practice can be built upon it; but there are two prominent points to be considered, both of which seem, at first, to be directly opposed to this view, but which, singular to relate, both of them, upon reflection, are really in its favor.

The first point is, that the cold air does *not* get down to the lung partition-wall so as to impinge upon and cool the capillaries. It stops at the stationary air space. The external air goes down the bronchial terminals, only to a certain measured calibre in the vessels, and there it stops; from that point to the partition-wall of the lungs the process of respiration is carried on by the diffusion of gases. This is a provision, which may have been made by nature, expressly to prevent this very accident.

The second fact is to be found in the general belief amongst physiologists, and not without good reasons, that it is hard to chill the blood in the internal parts of man, and especially in the lungs, by external cold.

In reference to the first fact, it may be said, the

[6] Rindfleish. Pathol. Histology, vol. ii., p. 15, where he quotes Colberg who believes that the alveoli are lined with epithelium; others do not.

statistics of pneumonia, as they are now accumulated, show that this disease is much more common in our Southern States, than in the colder climates of our Northern States; and that this law maintains for colder and warmer climates throughout the world, so that, it is asserted, even in the extreme north the Eskimo are peculiarly exempt from pneumonia.[7] The physiological working of the stationary air space, between the external cold air and the partition wall of the lungs would not only satisfactorily account for this point as a fact, but would render the assertion of the rarity of pneumonia in a cold climate, highly probable. Where the climate is cold the muscular structure of the bronchial tubes, which presides over the depth of the air space, regulates this matter automatically by a vital force, according to natural and preservative laws. On the contrary to this, where the climate is warm, there is a smaller development of muscular structure in the bronchia, and at the same time, a greater relaxation of the system generally, as well as of the delicate lung textures in particular. The lungs, therefore, expand more readily in the warmer climates and permit the air to pass unhindered lower down into the tubes and nearer to the pulmonary capillaries because the stationary air space is less. In this way the atmospheric vicissitudes that occur very suddenly in our Southern States, have many unguarded opportunities, especially at night, to cool the blood and block its circulation in the lung capillaries. On account of these two facts, if cold is the exciting agent, it might reasonably be expected that there would be a greater prevalence of pneumonia in the southern and warmer climates. But for the reasons already mentioned, the collected statistics, cannot in justice be used, as they have been, for an argument against the theory of the production of pneumonia by cold, according to the mechanism which has been advanced.

In treating of the second fact, viz: That it is hard to chill the blood in the lungs by external cold. It is to be regretted that no means are yet invented by which the temperature of the blood in the pulmonary capillaries can be registered. So far as the lungs are concerned anatomically, they *are* near the heart, and have a stream of warm blood constantly pumped into them. But there are no lack of illustrations to prove that the general mass of the blood may be reduced in temperature by cold applied externally, even by "chilling of the skin by cold;" cold baths, cold rooms, cold water beds, demonstrate this fact in the treatment of fever. All are familiar with the effect of cold on the function of the brain, and how ice bags produce torpor.

To these illustrations it may be added, that for a long time it was the popular, as well as the clinical belief, held steadfastly until recently, that the agency of "taking cold" in causing pulmonary congestion was a fact established by long observation.

This completes what will be said concerning the mechanism of pneumonia by means of "taking cold." It now remains to show the way in which malaria and alcohol predispose to the same effect. The subject of bacteria will be treated separately, and in a paper by Prof. Wm. C. Welch, of the Johns Hopkins Hospital.

Malaria plays an important part in the statistics of the mortality of pneumonia. There are many kinds of malaria. It is a generic term. Sewer gas malaria in cities which has been asserted to produce pneumonia;[8] house malarias in both city and country; ground malaria; overcrowding malaria, etc., in a great many varieties. But the only malaria that will be chosen for this demonstration is that great general malaria which occupies large districts of territory throughout the temperate and torrid zones, principally at elevations below 350 feet, and is found widespread in our country along sea-marshes and river bottoms; that malaria which produces chronic remittent fevers. The peculiar physiognomy and muddy complexion which this brings about, shows in each case the proportionate amount of textural changes which have been wrought by it. These textural changes are not always exactly the same in every malarial district, but they all affect the spleen, the liver, and the quality of the blood. The spleen is softened and enlarged, the liver is also enlarged, sometimes softened[9] and again indurated,[10] but always loaded with pigment; having the portal circulation obstructed. Geographically, this kind of malaria and pneumonia, according to the statistics of both diseases, increase progressively, going from the north to the equator. The manner by which this malaria predisposes to pulmonary congestion can be explained in a variety of ways involving more or less mechanical principles. The embarrassed portal circulation and the altered conditions of the blood, together with the marked debility which it produces in the vaso-motor nervous system, by weakening the heart and the muscles of respiration, are the principal factors from which the demonstrations can be made. Time prevents our entering into them more fully.

In what way, or more germain to our caption, by what mechanism, it may be asked, does the long continued habitual use of alcohol in excess predispose to pneumonia? The disease has been called the drunkard's pneumonia, and is a well-marked, well-known and a common disease. In our Southern States alcoholism and malaria often coexist in the same individual, and this is one of the principal causes for the large mortality of pneumonia in those States. The effect which alcohol produces on the liver and lungs has been

[7] Loomis, System of Medicine. Pepper, p. 316.
[8] Loomis—System of Medicine. Pepper, p. 317.
[9] Anderson and Fricke.
[10] Rindfleisch. Pathol. Histology, vol. ii, p.

thus described by Prof. H. Newell Martin of the Johns Hopkins University: "All the blood which flows through the mucous membrane of the stomach goes straight to the liver before it is carried to any other organ in the body. This blood of course takes with it whatever it has absorbed from the stomach. It is therefore not strange that the liver often becomes diseased from a man's taking alcoholic drinks. They cause a great overgrowth of the connective tissue of the liver, giving rise to what is known as *fibrous degeneration*. The true liver substance is crushed and killed and what remains is a shrunken, hard, rough mass, well-known to physicians as 'hob-nailed,' or gin-drinker's liver." The action of alcoholic drinks on the respiratory organs is thus described by the same author: "Indulgence in alcoholic drinks often keeps the mucous membrane lining the air passages in a congested state. It thus increases the tendency to colds of the head and chest. There is also a peculiar form of consumption, which is rapidly fatal and is found only in drunkards."[11] This is sufficient upon which to establish a mechanism of pneumonia from alcohol in excess. It will be seen that the circulation is obstructed by the "*hob-nailed*" liver, and although the organs may bear the strain, and naturally adapt themselves to the change for a time, yet ultimately the circulation is thrown quite out of its natural current and equilibrium; and the pulmonary capillaries, already in a chronic state of congestion from alcohol are easily excited by any other cause, as cold, to still further congestion, and pneumonia ensues.

It will not be necessary, in this presence, to say more concerning the "mechanism of pneumonia" from age, malaria, and alcohol. The structure of the lungs, and their functions; the circulation of the blood through them, and through the liver and spleen, have furnished suggestions to make the demonstration. It is admitted that the merest outline has been given here, but when these altered structures, with their consequences, are pursued, as they can be by the medical thinkers who are now addressed, the conclusions to be drawn from them will be perfectly clear. This mode of showing the production of pneumonia from its various causes, and by means of a mechanism from which it may grow; by which it is governed, and by means of which it may be treated, has been given as a contrast to the *indefinite* picture by which it is too often presented, and which may be largely answerable for its even still more indefinite treatment which has heretofore been offered. In every part of its literature, save one, there is a singular want of precision in the study of this disease. Attracted by the rich field which it offers for thought, less attention has been paid to its initial causes proper, and to the therapeutics flowing from them, than these points demand.

For practical therapeutic use, the presentation of the disease must not begin with a description of its textural alterations, for this is like the commencement of a narrative in the middle of a story, or like the exhibition of half a picture. Its initial cause must be demonstrated and its therapeutics based upon that. While it is difficult not to be influenced by scientific medicine proper, often at too early a period; while there are those who may be too easily carried away by new theories evolved in the laboratory, it must be acknowledged, that sometimes the most useful man is one who does his best to stop the prevailing mortality of a disease by carefully availing himself of, and keeping loyal to, what is already known; combining with this that which may be reasonably expected in the future; and by avoiding theories far-strained, as well as false dogmas. An equally interesting point for the mechanism of pneumonia to grasp and study, would yet lie before us in the future, if a microörganism should ever be found to produce the disease. But this is not yet the case.

About seven years ago Klebs found what he called an ellipsoid coccus, and thought he had traced it to pneumonia. Since that time this microörganism has been studied by others who have variously called it the nail-shaped coccus, the pneumococcus, or the microörganism of pneumonia. Little is as yet known about it, but enough is *suspected* to make it the duty of a physician to medicate the air of a room in which there is a patient having pneumonia, as will be hereafter explained.

CONCLUSIONS FROM THIS PAPER.

1. The predisposing causes, as the name implies, do not produce pneumonia, *de ipso facto*, but before its commencement they have already worked such structural changes in the human body that upon further disturbance of the system a congestion of the numerous pulmonary capillaries is more likely to occur than any other diseased condition.

2. A study of these structural changes, wrought by predisposing causes, gives advantages both in advisory prophylaxis, as well as in treatment.

The following letter from Dr. Wm. C. Welch is a summary of what we know of the relation of bacteria to pneumonia:

My dear Doctor Van Bibber:—At your request I write you a short account of our knowledge concerning the relation of bacteria to the causation of acute croupous or lobar pneumonia.

Not much importance was attached to the results of bacteriological investigations of croupous pneumonia before Friedländer, in 1883, described and obtained in pure cultivation a bacterium which he found in the affected lung in a number of cases of this disease. This microorganism was described by Friedländer as a round or oval micrococcus, possessed under certain conditions of a capsule capable of being stained, and presenting the so-called nail-like growth in gelatine. Friedländer's pneumococcus, as the organism is often called, although most bacteriologists now classify it as a bacillus, was found to be pathogenic for mice and in less degree for guinea pigs

[11] Human Body. H. Newell Martin, pp. 131 and 184.

and dogs but not for rabbits. Inoculations of pure cultures into the lungs of susceptible animals produces pleurisy and *lobular* pneumonia, in rare instances *lobar* pneumonia.

The belief which prevailed for a time after Friedländer's discovery that his pneumo-coccus is, if not the exclusive, at least a common cause of croupous pneumonia has not been confirmed by later researches. It is found that the pneumo-coccus, or more properly the bacillus pneumonia of Friedländer, is not so readily identified by means of its morphological and biological properties as was at first supposed to be possible. Other bacteria have been discovered which can be distinguished from it only by careful and laborious procedures. Little reliance, therefore, can be placed upon much of the work apparently in support of Friedländer's views as it is not certain, or even probable, that the observations in many of the cases related to Friedländer's bacillus. However this may be it is certain that this bacillus cannot be demonstrated in many cases of croupous pneumonia, either in the pneumonic exudation, the sputum, or elsewhere. Even the advocates of the causative significance of Friedländer's pneumonia bacillus now admit that it is the cause of only a small proportion of the cases of croupous pneumonia. In *my* judgment it has not been satisfactorily demonstrated to be in any case the cause of genuine croupous or lobar pneumonia of *human* beings.

At the present time the chief interest in this connection attaches to another species of bacteria. This species is the micrococcus discovered by Sternberg, in 1880, in his own sputum, and found by him to produce a rapidly fatal form of septicæmia in rabbits—the so-called sputum septicæmia. To this organism Sternberg has given the name of micrococcus Pasteuri. Its relation to croupous pneumonia has been studied with especial fulness and care by A. Fränkel and by Weichselbaum, of whom the former designates the organisms as the micrococcus of pneumonia, and the latter as the diplococcus of pneumonia. In distinction from Friedländer's pneumo-coccus, this organism is sometimes called Fränkel's pneumo-coccus. This second pneumo-coccus—the micrococcus Pasteuri of Sternberg—is present in the exudation and the sputum of croupous pneumonia far more frequently than is Friedländer's bacillus. It is regarded by Fränkel as the sole cause of genuine croupous pneumonia, and by Weichselbaum as the usual cause, the latter author claiming that a small proportion of cases are due to Friedländer's bacillus. The micrococcus Pasteuri has been found as a pure culture in the exudation of cerebral meningitis complicating croupous pneumonia.

It must be admitted that the evidence in favor of the micrococcus Pasteuri being the cause of croupous pneumonia is *stronger* than that in support of Friedländer's bacillus, but it does not seem easy to reconcile with this evidence the fact that the micrococcus Pasteuri has been found in a variety of conditions not associated with croupous pneumonia, viz.: in the normal saliva, in lobular pneumonia, in cerebro-spinal meningitis, in acute endocarditis, and in otitis interna. If this organism be regarded as the cause of these various diseases as well as of croupous pneumonia, the croupous pnemonia loses much of its typical or specific character. Sternberg, Fränkel and Weichselbaum consider that the occasional presence in the normal saliva of the micrococcus Pasteuri is not an obstacle to admitting the dependence of croupous pneumonia upon this organism, but on the other hand renders clearer the etiological rôle played by the accessory causes of pneumonia, such as exposure to cold, bad hygienic surroundings, old age, etc. These accessory causes they urge bring into existence the necessary conditions for the invasion and multiplication of the pathogenic organism.

The two microörganisms which have been mentioned are not the only species of bacteria which have been found in the exudation of croupous pneumonia, but they are the only ones to which bacteriologists are inclined to attach etiological significance in the production of this form of pneumonia. It is apparent that the evidence is not conclusive that either of the organisms is the infectious agent of croupous pneumonia, certainly no such evidence has as yet been presented as that which leads us to accept the tubercle bacillus, the typhoid bacillus, the cholera spirillum as the cause of the respective diseases in which alone each of these organisms has been found.

Yours very truly,

WILLIAM H. WELCH.

Baltimore, May 2, 1888.

THE TREATMENT OF PNEUMONIA.

This is a difficult subject to approach for many reasons. "Every new remedy almost is tried in turn for pneumonia. It is a disease particularly suitable to speculative medicine.[12]" After reflecting upon the manner in which the subject might be presented, it has been determined to do so in a way different from that which has been ordinarily pursued. It is useless to bring prominently forward oft repeated principles of practice concerning which most physicians have long since made up their minds. The subject will be presented for judgment, and therefore reasons will be given for each point of practice made, no matter how trivial it may seem. The larger and the longer one's observation may have been in the management of this disease, the more he will be likely to appreciate, and to be attracted by, what may be termed, the elegancies of therapeutics. It is fatiguing to the mind to enter into the figures of statistics, and as this has been done so often, and moreover, as there are now no new and corrected collections to offer, let it be taken for granted, that those which have already been published, are sufficient; and that they are as correct as they can now be made; although, what can be proved from them, each one's judgment must determine for himself. The only claim which will now be made is that of forty-seven years of observation, and those who may have been co-observers for this length of time, or near it, will recollect that at that time, as it is at present, pneumonia was the disease of the day. It has always attracted attention, and upon its treatment most physicians have based their hopes for usefulness and their expectations for success. The extraordinary appearances of the pneumonic lungs which are presented for pathological demonstration and study, contrast so strongly with the physiological lungs, when displayed, that they never cease to excite wonder and to strike the mind with amazement and dread. No one can forget these appearances, and when a case of pneumonia is under care for treatment, the recollection of them returns, and the physician is burdened with an anxiety which few outside of our profession can estimate.

It has been determined to present the subject of treatment of pneumonia by means of four hypothetical cases. One—a child of eighteen months, or under two years of age. One, a youth twenty-five

[12] Fothergill. Hand Book of Treatment, p. 347.

years old, of uncomplicated pneumonia. One case, sixty years of age, complicated with malaria, and one case, of seventy years old, complicated with old age, malaria, and alcohol. These four cases, it is thought, may sufficiently embrace the subject. These ages have been selected, because, according to the statistics, pneumonia is more common before 2 years of age—less frequent between 2 and 20—common again between 20 and 40—less frequent from 40 to 60—again common after 60. Making three distinct periods, early childhood, from 20 to 40, and after 60.[13]

As the point in view is strictly treatment only, in these hypothetical cases, the diagnosis is supposed to have been already made, and the treatment to be commenced immediately thereafter.

Case 1.—An infant between 18 months and 2 years of age. *Directions:* The child to be protected in the best manner possible; to be put in bed, if it will remain there quietly, if not, it should be nursed in the manner in which it will remain most composed, but its position to be frequently changed, so as to prevent the settling of blood in its lungs. The room should be pleasantly shaded and kept quiet, warmed by means of an open fire, and kept at a temperature of from 68° to 70° F. in winter. Its clothing should be slit open in the back at the first visit, so as to get free access to the bare skin without trouble. Its diet should be diminished to one-third of its usual quantity of food. Modify its bath, its amusements and the use of its voice, and in all attention to it, have only the one nurse with whom it will be most quiet in the room. To cry, as well as to talk, is bad for pneumonia.

The question should be now determined what remedies will be used in this case of disease.

1. Commence with a gentle purgative—the transferrence of a slight irritation to the intestines is a good treatment. Ol. ricini is the best, and more easily given when skimmed off of warm, sweetened water, flavored with mint.

2. Antifebrin gr. $\frac{1}{2}$, in solution, in sweetened water; this is intended to gradually diminish the heat of the blood. To assist nature thus far, even with the advanced theories before us concerning the pneumonic fever, is a good practice; if the pneumonic fever runs *too* high, this will control it.

3. The muriate of ammonia ½ gr. every four hours, to be given alternately with the antifebrin. This salt is better given in solution in weakened and sweetened spear-mint water.

4. Muriate of ammonia gr. 4 to an ounce of whisky, or bay rum. This is to be applied hot on a well fitted linen pad—3 x 4 inches—on the skin over the roots of the lungs, and to be covered by a a flannel pad and a well fitted oil silk arrangement; also, the feet may be rubbed with the same solution, the object being to carry off the supernatant heat and thus produce sleep and quiet.

5. To medicate antiseptically the air of the room. Bromine, chlorine, iodoform, carbolic acid, or other substances, in solution, to be placed in the apartment, near the child; where such a medication of the atmosphere will be made most potent for its good. The breathing of a properly medicated atmosphere is the most powerful mechanical mode of treatment. It is as constant, and as long-continued, as life itself. The bromo chloralum, 1 part to 20, answers a good purpose.

6. Repeat the gentle purgative every second or third day.

7. Continue this treatment without intermission for seven to ten days.

Pure pneumonia, in an infant at this age, is frequent, and is sometimes the slightest, and again the most serious of diseases. The statistics, for all classes may be consulted, in order to prognosticate how many cases similar to the one here described may recover. Practically, we may say, that if these seven directions are fully carried out, in good faith, that at least eighty out of a hundred of those cases which occur in private practice, amongst persons in good circumstances, will be cured. This proportion presupposes that the treatment is commenced as soon as the crepitant râle can be detected. This is encouraging.

Case 2.—A youth, 25 years old—uncomplicated pneumonia. *Directions:* 1. To be put to bed at once and follow the same general directions for temperature, shading, and quiet of the room as in the first case.

2. The diet to be reduced one-third of the habitual amount of nourishment ordinarily used, and a proper selection of articles chosen to suit the occasion, but the amount of food should be proportioned to the area of lung involved, if possible.

3. The initial purgative should be a saline. An effervescing saline aperient is the best.

4. Medicate the atmosphere of the room at once.

5. Antifebrin gr. iij to v, or antipyrin gr. 4 to 40 in cool water, and mur. ammonia gr. iij, in hot water, each given every four hours, alternately—one or the other every two hours.

6. Six scarified cups, drawing six ounces of blood, and six dry cups to be applied over the roots of the lungs, with a medicated poultice afterward applied to the cupped surface; when the irritation from the cupped surface has subsided apply the pads wet with the muriate of ammonia and whisky or bay rum to the back. Renew the cupping every three days or oftener, if necessary, with half the quantity of blood drawn. Give the purgative every two or three days, to be given early in the morning preferably. Protect the chest and arms with warm clothing, a flannel Nightingale is the best.

7. Continue this treatment without abatement for sixteen days, so that all trace of inflammation in the lungs may be subdued.

[13] Loomis. System of Medicine. Pepper p. 314.

8. Medicate the air of the room thoroughly.

This latter is a case which would give more apprehension than the first one, because, as a rule, the older the patient, the more serious the pneumonia. This case, like that of the infant, is supposed to be a type case of uncomplicated pneumonia. Like the first one, also, it is supposed to have been recognized at the beginning of the crepitant râle, and immediately thereafter submitted to treatment; with these premises granted, the prognosis is favorable in both cases, and the recovery, by the treatment instituted, should be complete. But it must be emphatically said, for these two cases, that, had they not been thus early recognized and properly treated, the result would have been different; because, from the mechanism of the parts which make up the disease, and the function of the organs involved, it is evident that pneumonia is a progressive disease. It cannot safely be trusted to the efforts of nature amidst the ordinary accidents of life without a proper and a vigorous treatment. From its essential nature it must spread in the lungs if not cared for, and unless stayed, will mechanically get such a lodgement there, as to destroy life as an acute disease, or cause the patient to be an invalid from chronic structural changes.

Case 3. Pneumonia occurring in a patient about 60 years old, complicated with remittent malaria. This case is yet more serious than the other two: the increased age, and the deteriorating malaria, giving their disadvantages to the patient.

Directions. 1. The same general directions as in the first two cases as to rest, temperature and shading of room, exposure of back, extra warmth for arms and chest; but the flannel should be heavier than in the other case. Be still more vigilant about changing positions in bed, and have the cuppings always done whilst in the recumbent posture, and this can be readily accomplished.

2. The effervescing saline aperient. The after opening treatment, in one of this age, may be done by some of the saline mineral waters; they refresh the stomach, and acting as resolvents, actually increase the vigor of the system.

The malarial complication must be met by the administration of quinine. Hypodermic injection is preferred. Six grs. of the alkaloid, or a solution of the hydrobromate, should be injected three times a day for three days; the hypodermic solution of the hydrobromate of quinine is the best. On account of the advanced age a somewhat greater support should be given to the patient; and smaller cuppings must be ordered.

3. *Remedies.* If the temperature is high, give antifebrin somewhat according to the rules and observations of Dr. G. Walter Bart,[14] 5 to 15 grs. every four hours, alternately with muriate of ammonia grs. iij in hot water, also when the cupped surface will permit, apply the muriate of ammonia solution 20 grs. to the ounce of whisky or bay rum, covered with the flannel and oil-silk pads, as before directed.

4. Medicate the air antiseptically. Upon this the greatest stress is to be placed.

5. Give the saline aperient water every second or third day.

6. Continue this treatment without intermission for from sixteen to twenty days.

This case is more serious than the others, and the statistics of mortality, for all classes, would give a large percentage of mortality for the class of which this is intended to stand as a type. The treatment, however, has been carefully selected, and if fully carried out in good faith, in private practice, amongst persons in good circumstances, it will be found that a large number recover.

Case 4. Patient 70 years old, complicated with old age, malaria and alcoholism. The number of years being given, and the term old age applied, presupposes that this latter is premature on account of the malaria and alcohol.

Directions. 1. The same general plan of treatment would be advised for this patient as it regards the appointments of the room, the clothing, the cupping, postural changes, etc.

2. The same remedies to be used, *i. e.*, the antifebrin, in capsules, the carb. ammonia—in place of the muriate—or alternating with it. Larger diluents of light mineral waters—the muriate of ammonia pads, the antisepsis of the air, the hypodermic use of quinine. The modifications to be made in this case are for the alcohol habit, and the age; these are important on account of the supposed long continued habitual use of alcohol—it cannot be suspended abruptly—but whatever preparation is selected to carry on the habit, it must be largely diluted with water; wine-whey, or weak whisky and water are the best.

In order to show the practical application of the plan of treatment which has been suggested. it will be necessary to recapitulate the articles and explain, somewhat in detail, the *modus operandi* of the several remedial means employed. The rest, warmth, postural changes and external applications, require no further mention. Much stress is laid on cupping over the roots of the lungs, between the shoulders, or more particularly still, between the third and eighth dorsal vertebræ, and for this reason. It will be remembered that the lungs are pedunculated organs. Together with the heart they can be taken from the body entirely by the severance of their roots. They are internal, but in another sense they are far removed organs; the length of the pedicle giving them their peculiarity. In this respect they have their analogues in the testes, the ovaries, the small intestines and other pedunculated organs. If the circulation in the pedicle be obstructed, the pedunculated organs suffer in consequence. *Whatever enters into the*

[14] See Practitioner, October, p. 294.

lungs, or is returned from them, must pass through the roots. It must therefore be of the first importance to keep their circulation through the roots open and free. Cupping over the roots is the best known means to effect this purpose according to the laws of counter-irritation over affected parts. The argument that there is no vascular or other connection between the roots of the lungs and the skin must be laid aside by the experience in the matter. Besides this, the actual abstraction of the blood, and the holding of a certain amount of it in one place *pro tempore*, is a means of derivation relieving local tensions, and when employed for this purpose, and with this aim in view, the cupping should be done, if this is possible, at the moment when the tension is greatest. It is thus a means of controlling, or at least of moderating the effects of high arterial action during fever. *Again, cupping is most valuable from the relief of pain, and feeling of oppression, which it affords.* There is no one remedy more valuable, in the treatment of pneumonia, than frequent small cuppings, applied with judgment, at the proper times, according to given principles. By arranging the clothing as described, it can be done without inconvenience, and without removing the patient from the horizontal position.

If we exclude the initial opening dose, the medicines recommended are only five in number.

The first, the muriate and the carbonate of ammonia, have been selected because they answer more of the indications required than any medicines which have ever been proposed. Of the muriate, it is said that by its own peculiar properties it acts upon the circulation in the capillaries and assists to unload them when they are engorged. When given in hot water it is a resolvent, a general expectorant, and a diaphoretic. It seems, upon practice, to act in the way described, and, if persisted in, to meet more of the indications, and to do more good, than any other medicine which has been tried. When flavored with spearmint water it is acceptable to children, and when given in hot water does not produce nausea in older persons. The carbonate of ammonia is more stimulant than the muriate, and it is also a resolvent, and is a remedy which seems to prevent embolism or the coagulating or engorging of the blood in the capillaries. Again, used in another way, for inhaling, carbonate of ammonium is so volatile that it will carry with it other remedies and not destroy their effects. Placed in a large, wide-mouthed, well stoppered bottle, it may be charged with carbolic acid, chloroform, thymol, or any of the antiseptics without injuring their effects, and in this way, inhalants, besides the medication of the air in the apartment, may be used in pneumonia with good effect. This inhaling bottle should be large, and used efficiently by means of deep inhalations.

Antipyrin and antifebrin are comparatively new remedies, yet, so far as their effects have been observed, they seem to control fever by diminishing the heat of the blood. Their effects have been thus compared and placed in juxtaposition:

Antipyrin lowers temperature in half an hour. Effect lasts two hours. More diaphoretic. Depressing after-effects. Cerebral sedative. Dose 15 to 30 grains. Tolerance from continued use.	Antifebrin lowers temperature in an hour, or more. Effect lasts six hours. More diuretic. No after-effects. Cerebral vaso-motor muscular stimulant. Dose 5 to 15 grains. Tolerance from continued use.

These are valuable remedies in pneumonia. But antifebrin is the best.

Of digitalis, veratrum viride, strychnia, strophanthus, and many other remedies proposed, much can be, and has been, discussed, concerning their action connected with fever and its defervescence, and heart failure; and they may be valuable remedies in the hands of those accustomed to their use—but their therapeutics are not sufficiently settled to warrant their exhibition in any *system* of treatment or cure.

It is interesting and instructive to study pneumonia in its mechanical aspect, if it is only to grasp the problems of the phrase "heart failure," which is so much used by those who have written of its treatment. Heart failure is *the most frequent, as well as the most immediate, cause* of death. Its mechanism is complicated. Reduced to a few principles it may be said: *First*, In pneumonia there is diminished lung area, and consequently a diminished supply of arterial blood. *Secondly*, the pressure of the exudation and engorgement in the swollen substance of the lung is the obstacle. *Thirdly*, the amount of blood which arrives in the heart has to be forced through these obstructions. This brings a heavy weight upon the right ventricle. *If this is continued* the heart must fail. What course should treatment pursue? Will it force the heart by digitalis; weaken it by veratrum; strengthen it by strophanthus; drive it harder by alcohol? Or, would it be better to endeavor to ease the heart, and to divert its force by cupping? The force is in the current, as the stream of blood arrives, and the strain is on the right side, on the ventricle, to drive the blood through the obstructions.

Repeated and repeated cuppings, in quick succession, it may be, are the safest and the best diverting means which a study of this fearful condition can suggest. To open a vein just at the supreme moment might be better, but there are few physicians who would not consider the cuppings a more safe teaching—and possibly, unless very sure of the moment, a better practice.

The four cases introduced to explain the plan of treatment recommended were hypothetical, and it remains finally to make a summary of them. When the two first cases were reported recovered it was not surprising. Their cases were diagnosed early and treatment commenced immediately; it

was thought fair and proper that they should recover. The third case, however, might be considered a test of good management from the beginning. This case, according to statistics, had less than an equal chance. If a mistake had been made by an indefinite treatment, it would have jeopardized the life of the patient at once. But the fourth case, 70 years old, with malaria and alcoholism, would not recover according to statistics. During a course of an indefinite *individual treatment* something might have been done which would prove injurious to the patient; but by the plan here proposed, *founded* upon the *mechanism* of the disease, it can be safely assumed that nothing injurious would be done; but, with the frequent cuppings to prevent heart failure, the supporting diet and personal hygiene; besides the continued medication of the air, and the inhaling of antiseptics; with the two resolvent ammonias and the antifebrin; with the antiseptic resolvents applied hot externally, together with a good moral support, we may leave this desperate case as doubtful, yet not without hope.

No mention has been made in the course of treatment of the pneumonia "*foudroyant*," which kills the patient almost like a thunderbolt, because these cases are scarcely recognized before the overwhelming catastrophe occurs. What should be promptly done in these cases is general venesection if one is sure of his case, but at any rate extensive cupping, to prevent the overwhelming congestion. At the same time medicate the air of the room, and use stimulating inhalants, with a view of reviving the patient, to divert the blood by again and again frequent cupping, so as to preserve the heart; and if these, happily, may stay the progress of the disease long enough, then, to commence the plan of treatment recommended.

CONCLUSIONS.

1. The mechanical interference to the circulation and aeration of the blood in the lungs is the main symptom to be combated in the treatment of pneumonia.

2. It requires prompt, urgent and aggressive treatment in the earlier stages of the disease, and this mechanical relief can only be afforded by decided local depletion.

3. Even after the effusion into the parenchyma has occurred, it requires still further local depletion to preserve the heart, and keep open the circulation in the roots of the lungs.

4. Pneumonia admits of study by mechanical as well as vital principles, and its pathology may be elucidated and its treatment improved by study in these directions.

THE CALIFORNIA BOARD OF EXAMINERS, after March, 1891 will require all who seek to practice medicine in that State to be graduates of a three-year graded medical college.

INTRAPERITONEAL RUPTURE OF BLADDER.

Read in the Section on Surgery at the Thirty-ninth Annual Meeting of the American Medical Association, Cincinnati, Ohio, May 8–11, 1888.

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Abdominal surgery, though more than fifty years a thrifty identity, has in the last half a decade assumed such a position, through the boldness and success of skilled operators, as to surpass beyond competition all other departments. Even the newly invaded region of the brain, with its brilliant record, is unmentionable in comparison.

Though among the rarer lesions for which abdominal section is appropriate, the still rarer comparative success after the operation lends an interest to the few recorded recoveries after laparotomy for intraperitoneal rupture of the bladder, beyond numerical desert.

In making report of a successful suture of intraperitoneal rent, I venture to call attention to the history of the operation, now about ten years old. Though the classical opinions expressed by Sir William MacCormac,[3] together with the comments and amplifications by Mr. T. Holmes,[7] cover pretty well both the theoretical features and the practical details of the condition and operation, yet besides the reports of several operations since Mr. Holmes' paper, there remain for elaboration and systematization many salient and important points.

It is a remarkable fact that, though indefinite reference to the propriety of attempting suture of the bladder after laparotomy for rupture has been made by Gross,[5] Larrey, Cussach and others, yet, except the suggestions of Holmes in his "Principles and Practice of Surgery" in 1875, nothing like a definite position is mentioned in any textbook on surgery published prior to 1880. Up to these dates the treatment of such condition is dismissed with a few words as to a hopeless expectancy. In a full review of the subject as late as 1886, Mr. Rivington[4] declares that up to that time intraperitoneal rupture of the bladder, however treated, had been uniformly fatal, excepting only Walter's[6] case of laparotomy without suture, at Pittsburg, in 1862.

This is perhaps the only laparotomy for the lesion under consideration until Mr. A. Willett,[6] in 1876, closed by suture of the bladder rent and abdominal wound. It appears that to Mr. Willett is due credit not only for priority in operation, but also in detail of suture of the vesical rent—as he disclaims[7] knowledge of previous suggestion pointing out the procedure. Interrupted silk su-

[1] London Lancet, December 11, 1886.
[2] London Lancet, July 23, 1887.
[3] MacCormac. London Lancet, December 11, 1886.
[4] Heath's Surgical Dictionary, 1886.
[5] Med. and Surg. Reporter, Philadelphia, February, 1862.
[6] St. Bartholomew Hosp. Rep., 1876, xii.
[7] Holmes. Lancet, July 23, 1887, p. 154.

tures were used in the bladder twenty-nine hours after injury. Urine escaped, however, through the rent, and death from peritonitis and shock took place in twenty-three hours. In 1878 Mr. Christopher Heath,[8] forty hours after accident, closed an intraperitoneal rent with continuous catgut suture. Leakage and extravasation occurred, and death on the sixth day.

In 1883 Pilcher,[9] commenting on these cases, describes with references to Vincent and Stein, the operation afterward successfully done by MacCormac[10] in two cases in 1886, and now recognized, with slight modification, as the perfect technique. In a table prepared by Sir Wm. MacCormac,[11] published in May, 1887, explicit and concise details are given of the history, symptoms, treatment and result in all the cases of intraperitoneal rupture, sixteen in number, reported up to that date. I take the liberty of presenting a new table made up in part of MacCormac's, with fuller de-

No.	Operator and Reference.	Age.	Time after Accident.	Symptoms.	Lesion in the Peritoneum.	Treatment.	Result.	Remarks.
1	Wm. T. Bull, Annals of Surg., Vol. 1, No. 1.	46	13 hours.	Characteristic.....	3¾ inch rent in posterior wall.	8 Lembert sutures: catheter tied in bladder: no drainage.	Died in 7 hours.	Fracture of pelvis; careful antisepsis.
2	Jos. M. Fox, Phil. Med. News, Dec. 10, 1887.	38	19 hours.	Characteristic.....	2½ inch triangular rent.	15 Lembert catgut sutures; catheter tied in; no drainage.	Died in 42 hours.	Post-mortem showed sutures intact; careful antisepsis.
3	C. Heath, Med. Chir. Trans., No. lxii.	Adult.	40 hours.	Tense belly, bloody urine by catheter.	Intraperitoneal rent (not described).	Neither catheter or drainage are mentioned; continuous suture of catgut; not further described.	Died on 6th day.	Post mortem showed sutures had given way (probably on 3d day); treatment probably not fully antiseptic.
4	Sir W. MacCormac, London Lancet, Dec. 11, 1886.	33	19 hours.	No shock; 95 oz. of blood by catheter; great pain.	4 inch rent in bladder, far back, not easy of access.	16 Lembert silk sutures, with a few sutures superficial of catgut; catheter every 4 hours; drainage-tube in abdomen.	Recovered.	There was no peritonitis, and patient recovered without a drawback.
5	Sir W. MacCormac, op. cit.	37	27 hours.	Neither shock nor symptoms; fluid in abdomen.	3 inch rent.....	12 Lembert silk sutures.	Recovered.	Neither catheter nor drainage. No peritonitis.
6	A. F. McGill, Lancet, 1886, xxi, 972,	54	68 hours.	Insensible for a time. Peritonitis.	4 inch rent from apex to fundus.	9 chromic catgut sutures.	Died in 17 hours.	Catheter nor drainage mentioned: post-mort showed bladder wound firm; no fluid in peritoneum.
7	C. J. Symonds, unpublished.	47	7	Collapse, great pain, adhesions over hypogastrium, blood by catheter.	Y-shaped rent, partly intra- and partly extra-peritoneal.	12 Lembert sutures.....	Died on 7th day.	Drain nor cathet'r mentioned: post-mortem, bladder leaked; pelvic fracture; secondary laparotomy for peritonitis.
8	T. P. Teale, Lancet, June 24, 1887.	25	18 or 20 hours.	Pain, no urine by catheter, dulness in flanks.	1 inch rent in fundus.	Perineal section and drainage; laparotomy; 6 catgut sero-serous sutures.	Died in 19 hours.	Post mortem, bladder water tight, no peritonitis.
9	Mr. Halstrom, Lancet, June 28, '88.	21	13 hours.	No shock.....	Rent 1½ inches....	Catheter 1st day: 9 Lembert sutures.	Recovered.	No peritonitis, no drainage. Irrigation practiced with boric acid solution.
10	A. Willett, St. Bartholomew Hosp. Report, 1876, p. 209.	48	29 hours.	Shock, pain, bloody urine by catheter. Peritonitis.	Transverse rent 3½ inches.	Interrupted sutures. (Silk?)	Died in 23 hours.	Leakage of bladder wound. No mention of drain or catheter.
11	T. Holmes, Lancet, July 23, 1887.	24	6 hours.	Pain; blood-stained urine on deep catheterization; point of catheter felt in abdominal cavity.	Rent 2 inches.....	8 sero-serous sutures of carbolized silk; perineal section uncompleted.	Recovered.	No abdominal drain; carbolic antisepsis; no peritonitis.
12	E. L. Keyes, N. Y. Med. Record, Dec. 24, 1887.	22	22½ hrs.	Incipient peritonitis; a little bloody urine by catheter; characteristic symptoms.	Rent 1½ inches backward.	Antiseptic care; 9 Lembert sutures of silk; permanent catheter; glass drainage-tube.	Died in 18 hours.	Post-mort., bladder wound intact; death from shock and alcoholic depression.
13	H. O. Hitchcock, Pittsburg Med. Review, March, 1888.	34	15 or 18 hours.	Shock; free fluid in cavity of abdomen; could not urinate; 11 pints by catheter of bloody urine from abdominal cavity; no peritonitis.	Rent 2 inches; peritoneal apposition of edges not entirely accomplished.	Carbolized catgut suture, not defined as to introduction; antiseptic irrigation, but not complete; permanent catheter.	Died on 2d day.	No drainage: vague report of post-mortem.
14	H. H. Grant, unpublished.	19	5 hours.	Shock; bloody urine by catheter; empty bladder later; slight bulging in perineum but no urine on aspiration.	Rent 2½ inches. Fracture of horizontal ramus near symphysis.	11 carbolized silk sutures, Lembert, complete antisepsis, catheterization every two hours; drainage-tube of rubber.	Recovered.	Drainage-tube removed on 6th day; no peritonitis, no result from fracture.

[8] Medico.-Chirurg. Trans., vol. lxii.
[9] Treatment of Wounds, p. 370.
[10] Op cit.
[11] Brit. Med. Jour., May 14, 1887.

tails supplied to some of his cases, published since his report of them, and adding four cases treated subsequent to his paper. I have removed from comparison cases Nos. 2, 5, 9, 10, 11 and 15 of his table. In Nos. 2, 11 and 15 (the latter Walter's case at Pittsburg) no sutures were used in the bladder, and in Nos. 5, 9 and 10 the injury was extraperitoneal before abdominal section. To the remaining ten cases, seven of which were fatal, I add 4—one by Mr. Holmes,[13] recovering; one by Dr. E. L. Keyes,[13] died in eighteen hours; one by H. O. Hitchcock,[14] died on second day; and one by the writer, recovering.

The history of this case is briefly as follows:

Case.—Jesse Minor, white, æt. 19 years, weight 135 lbs., fell from the shaft of a light cart (weight 400 lbs.), the wheel passing over pelvis and hypogastrium—from right pelvic spine—leaving only a slight bruised mark on the skin. Accident at noon April 2, 1888. After lying still about fifteen minutes the boy stood up without assistance, tried to pass water, but failed, though his bladder had not been emptied since 6 A.M. Prof. S. E. Woody saw him in about twenty minutes after the accident, elicited the above history, passed a catheter and drew off about 2 ozs. of bloody urine. A hypodermic needle withdrew no urine from the perineum. There was *intense* burning pain in hypogastrium and severe shock. Dr. Woody recognized the existence of intraperitoneal rupture. I saw the patient with Dr. W. at 1:30. A catheter introduced at this hour—about sixty minutes after previous catheterization—withdrew only a few drops of urine, still bloody. The pain, though somewhat controlled by the large doses of morphia given by Dr. Woody, was still severe on motion; pulse good, but countenance indicated shock. Fluctuation was not made out in abdomen, though some dulness existed on percussion over the flanks. The ensemble of the symptoms indicating exploratory section of the abdomen, the boy was removed to his home, a mile away, the family advised of his condition, and preparation made at once for laparotomy.

Operation.—At 5 P.M., after examination under chloroform, with the concurrence and assistance of Dr. A. M. Cartledge, the operation was made, five hours after injury. Dr. S. E. Woody administered chloroform, and Mr. Woody, of the class of the Kentucky School of Medicine, assisted us. The pubes were shaved and washed quickly with warm soap and water, and then with a sublimate solution, 1:1,000; 3 per cent. carbolic solution for instruments and thorough cleansing of our hands and arms to elbows; towels wrung out in sublimate solution 1:1,000 were put about the site of operation, and a gallon of hot Thiersch solution prepared to irrigate the cavity. An incision in the median line from the pubes 3 inches in length exposed the peritoneum, bruised and discolored, but unruptured save in one or two minute spots, through which the bloody water from the cavity oozed out. The cavity was quickly opened and ½ gallon of bloody urine poured out. The incision was now extended to the umbilicus. The introduction of the finger in front of the bladder discovered a loose fragment of bone about the size of a large chestnut, evidently crushed off the horizontal ramus of the pubes. This was not disturbed. Dr. Cartledge now passed a sound into the bladder, and I could presently find its point emerging through a rent in the fundus, 2½ inches in a transverse direction. The cavity of the bladder could be easily explored by the finger through this rent.

The abdominal cavity was washed out with Thiersch solution and, while the bladder was held up by a stout catgut ligature passed through the peritoneal coat behind the rent, I easily introduced eleven sutures of carbolized silk—rather coarser than would have been preferred—after Lembert's method, beginning a little beyond the end of the rent and drawing together the peritoneal investment of the bladder beyond both extremes of the tear. This part of the operation, done with an ordinary curve-pointed needle without a holder, was accomplished with unexpected facility. The bladder was not tested by injection for want of a proper syringe. The cavity of the peritoneum was again carefully irrigated with hot Thiersch solution, and sponged dry with mops of absorbent cotton. The wound was closed with deep sutures of silk passed through the skin, muscles and peritoneum. Superficial sutures of catgut closed the wound around a drainage-tube of soft rubber, introduced by Dr. Cartledge behind the bladder. Iodoform was dusted over the line of sutures, and bichloride gauze covered with absorbent cotton and bandage completed the dressing. The time occupied in the operation was about one hour.

The patient reacted promptly from the chloroform, and spoke intelligently in a few minutes. A hypodermic injection of ⅓-gr. morphia was administered, and he was left in the care of Mr. Woody, with instruction to introduce the catheter every two hours. He spent a fair night, with almost no pain. About 14 ozs. of urine were drawn in eighteen hours. At 8 A.M. his pulse was 115, temperature 99°. He was carefully watched and fed, and the catheter used every two to four hours as time went on, Mr. Woody and Mr. R. C. Telly, my private student, also of the class of the Kentucky School of Medicine, remaining with him alternately night and day. His temperature went to 100° but once—on the ninth day, from constipation—returned to normal after a free evacuation in response to sulphate of magnesia.

The drainage-tube was aspirated with a syringe daily for five days, never yielding over 1 drachm of sweet serum. It was removed on the sixth day.

[13] Op. cit.
[14] N. Y. Med. Record, December 24, 1887.
[14] Pittsburg Medical Review, March, 1888.

The wound united throughout, except around the tube, by first intention. The patient sat up on the fourteenth day; catheterization was discontinued on tenth day. The fracture of the pelvic ramus gave no trouble, and has occasioned no symptoms. I present the patient to speak for his recovery as complete.

In comparing the various methods of detail in the operation I shall return presently to one or two features in the steps taken in this case. The briefest report of the recorded operations I can make is in a reproduction of the table I have prepared. Fourteen cases are recorded in which the complete steps of laparotomy, intraperitoneal suture of the bladder, and closure of the abdominal wound were practiced. In some the catheter was tied in the bladder, in others repeated catheterization was practiced, and in one or two no steps were taken to drain the bladder. Abdominal drainage was practiced in the majority of cases. Of the total five recovered and nine died.

As a duty of the very highest practical importance bears upon us the obligation of determining, out of a comparison of results, which treatment promises most. Three methods are before us. The plan of inaction, with merely drainage by the catheter, recommended as safest by Heath,[15] after failing in his operation, must, in the light of present knowledge, be condemned as unsurgical and not to be entertained. We will consider laparotomy without suture; laparotomy with suture to external wound; laparotomy with closure of bladder rent.

It will be noticed from the table that no case of recovery presented any peritonitis, which of itself speaks volumes for the safety of the operation under antisepsis.

Notwithstanding the success of Walter's case, treated by the first method, there was severe peritonitis, besides the other reported cases, one by J. Duncan[16] and one by Sonnenberg[17] died on the 3rd and 4th days respectively of intense peritonitis. Moreover, most frequently the rent is so large, or occupies such a site in the bladder, as to render the prevention of seepage of urine into the peritoneal cavity impossible by any form of drainage. Besides, it is difficult to see any advantage to accrue from leaving the wound unsutured after the belly is sewed up as in Walter's case. The presence of carbolized silk sutures introduced by the method of Lembert, if not absolutely harmless, are a thousand times safer than extravasation of urine, and, if they occasionally, or even in two-thirds of all cases, fail to accomplish the object of their introduction the condition is no worse than those before. Nay, it is much better, for every hour before the extravasation nature is throwing a breast-work around the parts she desires to protect, and if the stitches do yield on the 3d or 4th day the damage will be certainly less disastrous.

With reference to the second method referred to favorably by later writers, notably Wyeth,[18] as appropriate for intraperitoneal rupture as well as after extraperitoneal supra-pubic section, a deversity of opinion is likely to prevail. The conditions after supra-pubic lithotomy are more favorable to convenient and successful suture of the bladder than in cases of rupture; yet the results are certainly less favorable in cases so treated. In his "Observations on Supra-pubic Lithotomy[19]" last year, Sir Wm. MacCormac says: "Schmitz has collected fifty-seven cases of suture of the bladder; forty-seven recovered, and eight died. . . . . The bladder wound healed by first intention in seventeen cases. The permanent catheter was used twenty-three times; eight times the wound united by first intention. In thirteen cases the catheter was not used; of these only three united by first intention. Twenty-three time catgut was employed, with only four successful results. In ten of the seventeen, where union took place by first intention, the mucous membrane was not included in sutures; in five no statement is made whether or not; in two, it was included; when the sutures gave way, this happened generally on the 4th day. By this time the danger of infiltration is mainly over."

These facts indicate that about one-third of cases of suture hold permanently, in the remaining cases the wound re-opens. Though, in intraperitoneal rupture the conditions are not quite so favorable, and though it is particularly true that the lapse of two or three days is not so much a safeguard against infiltration as under the conditions referred to by Schmitz, yet his conclusions are highly pertinent to the subject. In the same paper MacCormac gives statistics of the suprapubic operation without suture, with mortality of 24.4 per cent.; with suture the mortality is 35 per cent.

In view of these figures, which represent facts, it is perhaps wise to select a medium course. Under such conditions, as considerable period since the injury, with unfavorable local and constitutional indications with irregular lines in the rent, it would be preferable to stitch the tear to the abdominal wound, fill the incision with iodoform gauze, and drain both by catheter and tube. Under most ordinary conditions, and especially when the rent is too far back to admit of reaching the abdominal incision, the third method is appropriate. In a private communication, Prof. J. A. Wyeth mentions a case under his observation in which the bladder rent was closed, and then, for safety, the bladder attached to the abdominal wound. The cut, occurring during ovariotomy, did re-open, but infiltration was prevented by the patient recovering.

[15] Op. Cit.
[16] Lancet, 1886, vol. ii.
[17] Centralblatt fur Chirurg, 1885.
[18] Text Book on Surgery, 1888. Page 566.
[19] British Medical Journal, March 12, 1887.

Diagnosis. All experienced observers on abdominal surgery are in accord as to the great advantages of an early operation. The time *par excellence* is in the first eight or ten hours. Shock after such an injury does not subside, but deepens with the growing gravity of the condition. Though case No. 7, of MacCormac's table, operated on twenty-seven hours after accident recovered without peritonitis, yet in Walter's case peritonitis appeared in ten hours, and in most recorded cases indications of inflammation were found at the operation.

Symptoms. Though the symptoms are usually characteristic; clear history, great pain, severe shock, desire to urinate with futile attempts, perhaps little bloody water by catheter, and at times catheter can be felt high up in abdomen—yet occasionally the condition is greatly obscured. In Keyes' case, though the patient was seen in forty minutes after the accident, the nature of the condition was not suspected for fifteen hours. In neither of MacCormac's patients was there shock, and one presented so little distress that he was referred to a dispensary as an out-patient for the first day. Most writers on the subject, refer to the rarity of intraperitoneal rupture. Comparatively, this is true, but I am inclined to believe the infrequency of reports of such condition is due to its being often overlooked. In the *N. Y. Medical Record*, 1888, Dr. M. Singer, of Galveston, reports a case of a man 27 years old, admitted to hospital ten or twelve hours after injury from a kick in the abdomen, catheterization frequently repeated in fifty-four hours preceding death after admission, always found plenty of urine.

Autopsy showed an intraperitoneal rent three inches in length. Attention being drawn to the treatment by recent success, I predict much more frequent reports. Prior to 1886, 3 exploratory laparotomy for rupture, are reported. During 1886, 4 exploratory laparotomy for rupture, are reported. During 1887, 5 exploratory laparotomy for rupture, are reported. Thus far, 1888, 3 exploratory laparotomy for rupture, are reported.

In view of the pretty well established belief that laparotomy of itself, done under careful antiseptic precautions, adds but little to the gravity of any grave condition, it is right to urge that when symptoms strongly suggest rupture of the bladder, and particularly when aspiration of the perineum discloses no infiltration an exploratory operation should be done without delay.

But little is to be added to the conclusions of MacCormac and Holmes as to treatment. Clearly the bladder-wound should be closed after complete cleanly antiseptic irrigation of the abdominal cavity. This irrigation can be most safely done with the Thiersch solution (boracic acid 12 parts, salicylic acid, 2 parts, water 1000 parts), freely and carefully used to remove all contaminating taints. The wound should be approximated with silk sutures—after Lembert's method. The silk should be carefully carbolized, and of a fairly firm texture, introduced not farther than one-fourth inch apart, cut short and abandoned. Nothing will be lost by washing out the bladder after suture with the Thiersch solution. Both the best of the suture and antiseptic irrigation of the bladder are accomplished in this way. Four ounces is enough to employ. If any leakage appears from such amount of distension, it should be at once looked after. It is true such a step takes a little time, but it is not ill-spent, if it discovers a faulty suture through which a fatal seepage may take place.

The question of abdominal drainage is not decided. It is open to objection on the ground of admission of septic germs, and the weakening of the abdominal walls. The first can be avoided by covering the tube with antiseptic dressings, and carefully, practicing aspiration, and the second by withdrawing the tube in four to six days. By aspiration of the drain all accumulation can be evenly removed, with the risks of absorption of such septic material as may accumulate in the cavity.

Perineal section for the purpose of drainage is condemned, both by MacCormac and Holmes, as not only difficult, upon the empty bladder, but a useless and dangerous complication. When suspicion of urinary infiltration in the prevesical space complicates the diagnosis, aspiration through the perineum, with a long needle, will indicate the condition.

With regard to catheterization, I cannot put the slight risks of the occasional introduction of a soft aseptic catheter, in comparison with the immense advantages of rest of the bladder and prevention of over-accumulation of urine and straining after suture. Though perhaps after the fourth day the patient may be permitted to relieve his bladder in the natural way, even then he should carefully urinate every two or three hours, avoiding all forced contraction of abdominal muscles or of bladder walls.

Refreshing the edges of the rent is wholly unnecessary when the approximation is made by the sero-serous method of suture.

Of antisepsis it is useless to make other mention than that the protection it offers should be secured to every patient by the most skillful and unremitting care.

DR. H. O. MARCY, of Boston: Within the last two years I have had two cases of injury to the bladder which should be put upon record. They were not ruptures from external causes. One was a a case in which I found, to my surprise and sorrow, that, while operating upon a large uterine myoma, I had made an incision of from 1 to 2 inches into the bladder. I sutured it together, and union took place. In repairing the rent, I united first the edges of the mucous mem-

brane, and then the overlying structures, with fine tendon sutures. The second case was that of a child of 2 years of age in which there were two openings. I succeeded in closing them, followed by complete cure. All this helps to contribute interest to the subject, and I am sure we are under obligation to Dr. Grant for his demonstration of the subject, for bringing his patient so long a distance to exhibit the result.

GASTROSTOMY; WITH THE REPORT OF A CASE.

BY MILES F. PORTER, M.A., M.D.,
OF FT. WAYNE, IND.

Carl Z., æt. 19 years, German, family history unimportant. Four months before his admission to the Ft. Wayne City Hospital, while yet in Germany, during a drunken spree, he swallowed some "browish-looking fluid" which "burned his throat at the time," since which he has had gradually increasing difficulty in swallowing. He entered the hospital Sept. 9, 1887, when an examination by his physicians, Carl Proegler and Howard McCullough, revealed the existence of an organic stricture of the œsophagus, commencing at the level of the cricoid cartilage, and extending downward about 1½ inches, rendering the passage tortuous and admitting of the passage of no instrument except an elastic urethral bougie; the largest size of this which passed being No. 16, Am.

Repeated efforts to pass olive and acorn ivory-tipped whalebone bougies failed, even with tips of smaller diameter than the elastic bougie passed. Deglutition of liquids and semi-fluids only was possible, but exceedingly slow and difficult. Regurgitation often occurred, and attempts to swallow were accompanied by severe fits of coughing. Notwithstanding the repeated passage of bougies, the stricture grew tighter, deglutition even of fluids became almost impossible, the patient lost strength and weight, and was crying with hunger, when on Dec. 4, 1887, he was advised by his physicians to have the operation of gastrostomy performed. Having gained his consent they requested me to operate, which I did in a room prepared by fumigation with sulphur for 18 hours, thoroughly aired, and supplied with new bed and bedding. I was assisted by Drs. H. McCullough and Carl Proegler, and there were present Drs. Dills and McOscar, a nurse, and the matron of the Hospital.

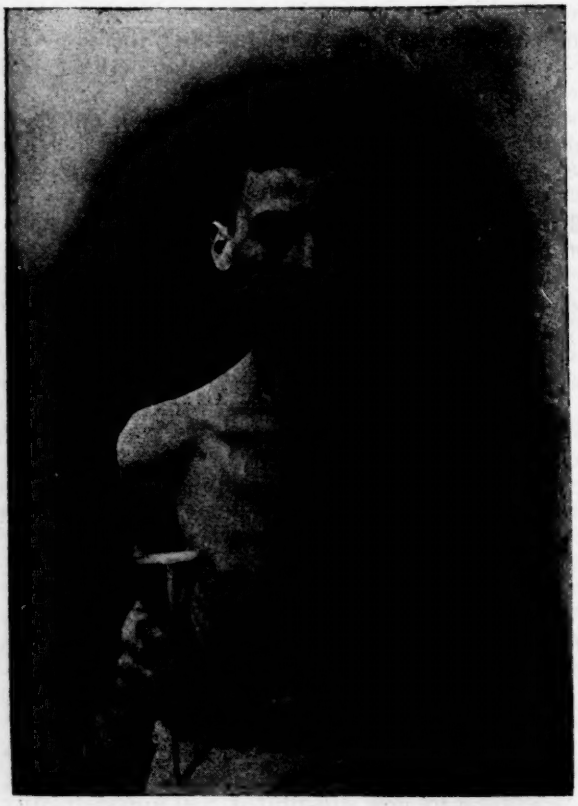
The patient, having received a bath and clean clothing, was etherized, when his abdomen was washed in a 1:1000 solution of corrosive sublimate, and an incision three inches long was made parallel with and an inch below the costal cartilages of the left side, dividing the muscles—including the outer edge of the rectus—and fascia down to the peritoneum. Forceps were applied to bleeding points, the peritoneum hooked up and divided on a director the full length of the wound. The greater end of the stomach—which organ was much contracted—together with the lower border of the liver now presented, when the anterior wall of the stomach was drawn out and two threads of black silk were passed parallel and about three-eighths of an inch apart through the peritoneal and muscular coats, by which the organ was held in position by Dr. McCullough while the operation was being completed. Two stitches were passed at each end of the wound, including the parietal peritoneum and all structures of the abdominal wall. Two more were now passed, one above and one below, working toward the centre, including the same structures and also the outer coats of the stomach, after which six sutures were passed on each side of the wound, including the outer coats of the stomach, the parietal peritoneum and skin. All the sutures were now tightened, in the same order as placed, cut short, the wound washed, dried, dusted with iodoform and covered with six layers of sublimated gauze and a generous supply of absorbent cotton secured by a bandage pinned snugly around the body. No ligatures were required. All stitches, 18 in number, together with the guide-threads, were of iron-dyed silk. The guide-threads were of course allowed to remain until the stomach was opened.

The operation occupied less than an hour, and was followed by only slight shock, from which he reacted nicely, the pulse being 76, respiration 26, and temperature 100.5° F. the next morning—18 hours—after the operation.

All went well until the end of 40 hours, when the cough, which had troubled him somewhat ever since his trouble in swallowing commenced, grew worse, respiration became more frequent, the pulse 110, and temperature 102.2° F. An examination revealed a broncho-pneumonia of the lower right side, and showed the wound dry, with no evidence of peritonitis. Up to this time the patient had been taking milk, champagne and brandy *per os*, for, as is usually the case, he had less difficulty in swallowing after the operation; but as efforts at deglutition always excited the cough, enemas were now substituted, and hypodermatics of morphia, grs. ¼, given to quiet the cough, which caused pain in the wound. Fomentations were applied to the chest.

The patient gradually grew worse until, at 3 P.M. of the 7th, 48 hours after the operation, the temperature was 103° F., pulse 142 and feeble, respiration 50 with marked cyanosis, and death was looked for by both of my colleagues and myself. We now administered 8 drops of Squibb's fl. ext. of digitalis, hypodermatically, with brandy; ordered fomentations and enemas continued, and 10 drops of digitalis every three hours *per os*, while the morphia was discontinued on account of the cyanosis, though it had produced no pronounced

symptoms of narcosis. Much to our surprise the patient improved so that on the 8th, at 4 A.M., the pulse was 126 and much stronger, temperature 101° F., respiration 38, and cyanosis much diminished. At 3 P.M. of the same day, though the temperature had risen to 103° F., yet the pulse had improved, falling to 122 with increased strength, respiration 49 and cyanosis still diminishing. A hypodermatic of morphia (¼ gr.) was now given for cough, the dressing removed, and stomach opened, by puncturing with a tenotome, and a No. 10 French elastic catheter introduced and fastened with adhesive strips. The digitalis and enemas were now discontinued, stimulants and nutriment being given by injection through



fistula, and, as the cough grew less, he was allowed to take some milk, etc., *per vias naturales*.

The dulness began to disappear and the recovery from this time on was uninterrupted, though the respiration continued rapid until the wound was healed, which was due (in part at least) to the wound having been made too near the costal margin.

The stitches not connected with the stomach were removed on the fifth day, and those attaching that viscus to the abdomen on the tenth.

He sat up first on the ninth and was walking about by the twenty-fifth day.

The enemas were well retained throughout, the bowels moving first on the sixth day.

The patient gained in strength and flesh and continued to feed himself both through the fistula and in the natural way, being able at times, especially in the early morning, to swallow better than at others, though the stricture grew tighter and tighter until May 7, 1888, since which time he has fed himself entirely by the tube. On April 30 the tube was removed, and a tupelo tent inserted to dilate the fistula, after which a large, hard-rubber tracheotomy tube was inserted; but as this permitted a great deal of leakage, a soft catheter, No. 16 (American), was substituted, since which no leakage has occurred. The first tube was entirely satisfactory in every respect, except that its diameter was too small to allow of a sufficiently varied diet.

During the first seven days after the use of the larger tube he gained seven pounds in weight.

The character of the stools have indicated throughout a good digestion.

The photograph here shown was taken just before the substitution of the larger for the smaller tube, and consequently represents him as poorer in flesh than he is at the present time. Without tiring our reader by an extended review of this subject I wish, briefly, to discuss the following questions:

1. When should the operation be made?
2. At what time should the opening in the stomach be made relative to the opening of the abdomen?
3. What anæsthetic should be used?
4. What kind of tube is best?

Regarding the first question I am convinced, from a rather extended research into the literature of the subject, that J. Greig Smith is right when he says "statistics prove little in the way of results beyond the fact that the operation is systematically delayed too long.[1]" While this is true whether applied to cancerous or cicatrical stricture, yet *early operation* should be particularly insisted upon in the latter class of cases, for in these the operation is not merely palliative, but may prolong life indefinitely.

The mortality after operation is about the same in malignant and non-malignant cases. This, it seems to me, can only be accounted for by assuming that the operation is deferred too long in the latter in the hope that something may yet be done by milder methods. In strictures located high, as a result of the entrance of foreign matter into the bronchial tubes during efforts at deglutition, a bronchitis is often set up which will continue to grow worse as the cause continues; hence I regard the presence of bronchitis as an indication for early operation.

I cannot close the discussion of this question

[1] Abdominal Surgery, second edition, p. 350.

better than by recommending for adoption the doctrine of J. Greig Smith.

Speaking of cicatricial strictures he says: "I conceive, therefore, that in every case, ... as soon as it becomes evident that minor measures are ceasing to be efficient, we ought to perform gastrostomy. And, further, the operation ought not to be delayed beyond the time when the health begins palpably to suffer."[1]

2. What time should the stomach be opened relative to the opening of the abdomen?

If the patient be able to swallow fairly well without producing cough, or if enemas be well retained, and there is no immediate danger of death from exhaustion, it is better to wait four or five days before opening the stomach. If, however, there be much bronchitis which is clearly aggravated by attempts at smallowing, or if death from exhaustion is threatened and enemas are not well retained and absorbed, then the operation should be completed at once or at most at the expiration of four or five hours, as agglutination will take place in this time. I am not aware that any one has ever spoken of bronchitis as an indication for early operation, or its completion in one sitting, but to my mind it is one of the most frequent and important in cases in which the stricture is located high or in which there is much regurgitation. In view of the fact that the necessity for the early opening of the stomach may arise in any case, it would be better always to fix the stomach accurately and securely to the abdominal wall.

3. What anæsthetic should be used? While I am opposed to chloroform as a general anæsthetic, yet we believe it by far the safest in the great majority of cases of gastrostomy. Bronchitis frequently exists at the time of operation, and if we add to this the additional irritation that ether always produces, it will not take a great stretch of the imagination to see how it might prove fatal. And a pneumonia or bronchitis would prove fatal in these cases that under ordinary circumstances would be promptly recovered from. Not only does the exhaustion, usually present, and the shock from operation contribute to the fatality of bronchitis and pneumonia in these cases, but another important factor also, is the proximity of the wound to the diaphragm and its involvement of accessory muscles of respiration, which renders deep breathing painful and leads to a continuous congestion of the lungs, even in the absence of inflammatory action. Again, coughs are more or less dangerous in all cases of abdominal incision, for the traction which they produce on the stitches interferes with union and may open the wound. If ever I am called upon to make this operation again I shall use chloroform as the anæsthetic in the absence of any special contraindication.

4. What kind of tube is best? Leakage after establishment of the fistula is one of the greatest drawbacks to the operation. Various devices have been used with varying degrees of success. J. Collins Warren describes and illustrates a very ingenious device in the *Medical Record*, of Nov. 5, 1887, which was successful in the case there reported, and is constructed on the same principle as Bernard's tube, which he used in dogs, except that Warren's was made of india-rubber. With both these tubes the idea is to prevent leakage by approximating the flanges. Such approximation leads, as a rule, to annoying, if not serious, ulceration from pressure.

Any tube made of hard material is objectionable; for if it fits tight enough at first to prevent leakage, it will soon produce absorbtion by pressure, and then leakage will occur. Again, if a hard tube is used there is danger of the inner extremity producing irritation unless great care be used not to have it long enough to project beyond the level of the mucous surface. The tube should be such as can be worn continuously, and would permit of feeding with a minimum amout of trouble. The lumen of the tube should be sufficiently large to allow solid food to pass easily through it. An ordinary soft rubber catheter of large size (No. 26 to 30 F.), held in place by adhesive strips, meets all requirements better than any other device with which I am acquainted. The flexibility of the catheter and its smooth rounded end prevent it from producing annoying irritation. Being soft, it can be fitted tight enough to prevent leakage without the pressure producing absorption, the gastric juice does not affect it, it is sufficiently long to permit of food being given through it without removal of any of the clothing. Outflow of the stomach contents is easily prevented by the use of a cork in the extremity. One should be chosen with as thin walls as can be found, for they will be found to differ in this regard very considerably.

June 4, 1888.

[1] Abdominal Surgery, second edition, p. 351.

A LARGE SUPPURATING ABDOMINAL CYST.

Read before the Medical Society of the District of Columbia, March 7, 1888.

BY JOS. TABER JOHNSON, M.D.,
OF WASHINGTON, D. C.

I was called to Miss C. on February 13, 1888, by Dr. Bedford Brown, of Alexandria, Va. I found her to be a spinster, aged 57 years, with an enormous cystic abdominal tumor, which had been diagnosed as ovarian. After examination, I expressed the opinion that it might be ovarian, but was quite as likely to be a dermoid-cyst or a fibrocyst of the uterus. It was so very large as to prevent any accurate palpation or diagnosis of its attachments or origin. She said she had first noticed it low down in the left side—that she had always thought it had something to do with the kidney on that side. It had not prevented her from at-

tending to her duties as a school teacher for a long time. Thought it had been growing for 20 years. For the past five months had grown rapidly, and for several weeks she had been confined to bed—had lost all desire for food, suffered much from nausea, diarrhœa, progressive emaciation and consequent prostration. Had had several attacks of peritonitis, with pulse varying from 100 to 120, and temperature from 100° to 103°.

When I saw her she was a great sufferer from the effects of the size and pressure of the tumor; embarrassed respiration, two large bed-sores forming, inability to hold her water, absolutely no appetite, frequent vomiting, turned over in bed with great difficulty, and was unable to sit up or walk about.

From the size of the growth I judged it must weigh about 75 pounds. She was very anxious for an operation, and requested to know if she had any chance to get well. I told her I thought she had, but that she had many points against her; such, for example, as her age, 57, her great weakness, inability to take food, repeated attacks of peritonitis, probably resulting in the formation of numerous adhesions, lack of recuperative power, etc. She was anxious to enter my private hospital and made her plans to be transported to Washington, but I was unwilling to receive her.

I went to Alexandria on the morning of February 28, 1888, taking with me Dr. Cuthbert, to assist, Dr. Luce, to administer the anæsthetic, and a trained ovariotomy nurse. Preparations being completed the operation was begun at 10:15 o'clock.

I was less sure of my diagnosis after palpation under ether and as the operation proceeded grew more and more uncertain, and after the tumor was removed was more uncertain than ever. Percussion showed tympanitic resonance low down in front and over the anterior surface of the tumor in a narrow line. I knew I should find intestine there and I did. Upon making a three-inch incision the descending colon came first into view, and the entire anterior surface of the tumor was covered with omentum, in which were many large blood-vessels. I selected a spot free from vessels after enlarging the opening to six inches, and tapped the tumor with Lusk's large trocar. I drew off 70 pints of brownish-black fluid. Her breathing at once became deeper and better.

I then drew out a portion of the sac and cut through the vascular omentum, and began the tedious process of enucleation. The intestine being attached to omentum it peeled off with the omentum and gave little trouble by itself.

The great cavity out of which the cyst came was entirely outside of the general abdominal cavity. While enucleating the cyst I tore through its capsule or covering low down in the pelvis and thus gained an opportunity to examine for the first time the nature of the pedicle, and was surprised to find the uterus and ovaries perfectly normal and entirely free from any connection with the tumor. I continued the enucleation and finally freed it from all its attachments. In doing so I was compelled to enlarge the incision three or four inches above the navel, and traced its origin deep down and to the left of ths vertebral column. I now thought it to be an enormous cyst of the left kidney. The condition of the patient became so bad that fears were expressed that she would die on the table. Every effort was made to revive her, including hot water in the abdominal cavity. It was evident she was sinking and the pedicle was drawn up into the upper angle of the wound, and finally secured with Keith's clamp. The cyst cavity and abdominal cavity were then washed out, the edges of cyst cavity were stitched to the edges of the abdominal wound which was closed with a dozen sutures; dressings applied, and the patient put to bed. She died in about half an hour.

I have been unable to decide as to exact nature of the tumor. Dr. Lamb, of the Army Medical Museum, says he does not know what it is, and I hope it will be referred to the microscopical committee for examination and report.

The following is Dr. Lamb's report:

Large Suppurating Cyst, Removed by Dr. J. Taber Johnson.—The cyst is unilocular with several depressions like sub-cysts, whose walls have disappeared in the general cavity; or they may be simply sacculi. The outer surface shows a smooth covering like peritoneum; the inner surface a nodular thickening like a suppurating surface, chronic in character, and in recent state was partly covered by blood-clot. The wall itself is white and dense and shows many sinuses like the wall of the pregnant uterus; but they appeared to be entirely empty of blood. Two tubes enter the great cavity in very much the same oblique manner as the ureters in the bladder; indeed they much resemble the ureters. They do not so much resemble Fallopian tubes.

MEDICAL PROGRESS.

TREATMENT OF HEAT FEVER.—DR. F. A. PACKARD, of Philadelphia reports thirty-one cases of heat fever treated at the Pennsylvania Hospital during the summer of 1887. The cases were all treated under a canvas roof, covering over a portion of the hospital yard. This was found to be a great convenience, and of benefit to both patients and attendants. As the yard is paved with artificial stone, and could consequently be kept cool by liberal use of the hose, there was a much less impeded circulation of air under the canvas then could have been obtained

in a ward, and the cases were removed from the unavoidable bustle and constant motion present in the general receiving ward. Adding to this fact that practically no time at all elapsed between their arrival in ambulance or police patrol wagon and the institution of treatment, the advantages of the temporary ward are apparent.

Almost without exception the cases were brought to the hospital either on the hospital ambulance or on the police patrol wagons, and were usually rubbed with ice on the way up to the hospital. The patrol crews soon learned how to diagnose and temporarily to treat sunstroke, and on only one occasion was a patient rubbed with ice who was not a fit subject for such treatment. This preliminary icing undoubtedly was of value to the patients as saving time, and it probably kept the temperature record in the cases at a lower average than it would otherwise have obtained.

As soon as a patient with heat fever was brought to the hospital he was placed on a waterproof fracture-bed, his clothing removed as rapidly as possible, a thermometer introduced into the rectum, and ice packed about the body and extremities. Usually at the outset, ℥ xv or xx of tr. digitalis were administered hypodermatically. The thermometer was removed every seven minutes, the icing being continued until the rectal temperature fell to 104° F. The patient was then dried and put on a clean bed, with an ice-cap to his head, and in favorable cases the temperature gradually fell to normal. It was found that, if the icing were continued after the rectal temperature had fallen below 104° F., there was apt to be too rapid and great a fall, so that the application of external heat and free stimulation were required—a state of affairs certainly undesirable.

The above is an outline of the general mode of treatment adopted in the cases with temperature exceeding 106⅘° F. Those cases with a temperature below that point were stripped and liberally sponged with a mixture of one part of alcohol and four parts of iced water, an ice-cap being applied to the head. If the temperature were not above 106° F., this was always found to be sufficiently active treatment. Subsequent elevations of temperature occurring after primary reduction were treated after the manner indicated above. In but a few cases were any other antipyretic measures adopted.

Other means of treatment were employed to meet individual symptoms in various cases. Where convulsions were present after the temperature had been lowered to a considerable extent, morphia was employed, usually with good effect. In the favorable cases respiration and pulse both improved in character with the fall of temperature, but if they did not do so, bleeding was employed in spite of the feeble pulse, and was almost invariably followed by quieter, fuller respirations, with a soft, steady pulse.

A word in regard to the use of bleeding. When the face was congested or livid, the capillary circulation over the whole body obstructed, the heart, as determined by auscultation, laboring to force the blood around the vascular circle, the breathing shallow and stertorous, the contracted pupils with other evidences of obstructed venous circulation in the brain present, the evident indication was to empty the overloaded veins of the blood that was stagnating in them and so embarrassing both respiration and circulation. Wet-cupping behind the ears was always first tried, but it was in almost every case impossible to withdraw more than a few thick black drops of intensely altered blood, even when crucial incisions, with a bistoury were added to the smaller incisions of the scarificator. In no case where it was attempted could enough blood be withdrawn by this means to affect either the general or cerebral circulation. Bleeding from the median basilic was then, if deemed necessary, employed, and even with this free outlet the blood did not flow, but had to be squeezed up from the hand, issuing then in thick, black jets and ceasing as soon as upward pressure with the hand was discontinued. After the withdrawal by this means of from twelve to sixteen ounces of blood there was usually marked improvement in circulation, respiration, and color, with, in some cases, complete or partial return of consciousness.—*American Journal of the Medical Sciences*, June, 1888.

Saccharin in Preventing Ammoniacal Change in Urine in Chronic Cystitis.—Dr. James Little says:

For the past three years I have been asked, from time to time, to see a lady, nearly 80 years of age, who is quite confined to bed in consequence of chronic disease of the bladder, which gives rise to frequent and painful calls to pass water. The urine always threw down a copious purulent sediment, and, except when decomposition was prevented by treatment, was always ammoniacal. The lady has many times passed with great suffering, phosphatic calculi, and, I have no doubt, many such exist in the bladder, but she has always refused to permit any surgical interference beyond the occasional introduction of a soft catheter, and the washing out of the bladder by a lady who acts as her nurse. Quinine and boric acid, when taken in fair doses, always purified the urine; but about three months ago her stomach became so irritable that these drugs could not be borne, and the washing out of the bladder by a weak warm sublimate solution could no longer be practiced, as the passage of the catheter had become exquisitely painful. The consequence was that the urine became so offensive that the odor met one on the stairs, and the

patient's attendants had often to leave the room to avoid being sick. In this difficulty it occurred to me to try saccharin. I directed six of the tabloids to be used daily. In three or four days the urine was no longer offensive. The patient has continued their use ever since, and the urine has not again become ammoniacal, though there is little if any, diminution in the quantity of contained pus.

Since the foregoing case came under my observation, I have had four other opportunities of observing the effect of saccharin in patients who were passing ammoniacal urine. They were all males; one a case of catarrh of the bladder, in a paraplegic gentleman; one a case of chronic cystitis, with enlarged prostate; and two cases, in which there had existed stricture of the urethra, but in which, although a surgeon had successfully dilated the stricture, the urine remained ammoniacal. In all these cases the saccharin was distinctly useful, but in all its administration had been combined with the daily use, by the patient himself, of a catheter, so as to prevent the accumulation of residual urine in the bladder—a precaution without which no drug will, I think, prevent decomposition of the urine.—*Dublin Journal Med. Sc.*, June, 1888.

CAFFEIN AS A CARDIAC STIMULANT.—DR. DE GEMPT writes (*Berl. klin Woch.*, Nos. 25 and 26), in support of the employment of caffein (mostly in the form of the bisalt, "caffeinum natrosalycilinum") hypodermically and by the mouth in cases of threatening collapse, especially in pneumonia. He records several such cases, but, in all, other stimulants, as alcohol, ether and ammonia, were more or less freely given. The dose of the caffein was 0.35 grm., repeated four or five times a day, but sometimes a larger quantity—*e. g.*, 0.2 grm.—was given. The author says that the drug is indicated in the course of acute pneumonia, as soon as there is evidence of cardiac failure, lowered arterial pressure, great rapidity or irregularity of the pulse. The administration of the drug should be commenced, if possible, before the onset of collapse; but even if the latter condition set in rapidly the drug is often of use, and is most urgently indicated. Where there is cardiac debility, and also in the very young or old, caffein may be prescribed from the beginning of the attack. The result of its employment is to cause a diminution in the pulse and respiration rates, an increase of the arterial pressure, with fall of temperature and general improvement. Stimulants are not to be withheld, but are often very usefully given in conjunction with the caffein. The drug has a very rapid action, and in serious cases the effect may be still more quickly produced by administering it subcutaneously. It may be continued for a short time after the pyrexia has abated. Caffein is also indicated in collapse and hypostatic congestion of the lungs; whilst in pulmonary emphysema and asthmatic conditions the indications for its use are the same as those in cases of heart disease.—*The Lancet*, June 30, 1888.

INHALATIONS OF SULPHUROUS ANHYDRIDE IN PHTHISIS.—DELON records the case of a man, 32 years of age, whose father died of pulmonary disease at 65. His wife also died of phthisis. Two months previously he caught cold and coughed incessantly. Subsequently he rapidly became emaciated and had profuse night-sweats. Rise of temperature at night. Appetite and digestion good. On examination, the right apex was found to be consolidated, with moist râles aftes coughing. He was treated by counter-irritants and subcutaneous injections of eucalyptol. His general health was also attended to. He did not improve, and by the end of February he expectorated large quantities of green, purulent material. His condition was grave in the extreme, a cavity having formed in the right apex, and sulphurous inhalations were resorted to as a last resort. Half a handful of flowers of sulphur was thrown on to a shovel of red hot cinders, and the patient inhaled the fumes until prevented by impending asphyxia. Each séance was followed by abundant expectoration of the purulent material. In the course of a fortnight signs of amelioration manifested themselves. The inhalations were continued together with the general treatment. Three weeks later the patient was apparently cured. The cavity in the right apex had cicatrized, and his general condition was flourishing. He was enabled to resume his laborious employment as a navvy, and no recurrence had taken place down to December, 1887.—*London Med. Recorder*, May, 1888.

THE SUBCUTANEOUS INJECTION OF ANTIPYRIN.—WOLFF, of Breslau (*Therap. Monatshefte*, June, 1888), thus summarizes the uses of antipyrin subcutaneously): 1. In the muscular rheumatism. 2. For the chest pains of phthisis. 3. For the neuralgias of superficial nerves. 4. As an aid in diagnosis. 5. In attacks of asthma. 6. For painful conditions, when morphine is contra-indicated, or to replace the latter, particular in children and those who bear morphine badly.—*Medical News*, July 14, 1888.

DISINFECTANT INJECTION IN LEUCORRHŒA.—CHÉRON uses the following formula:

Chlorate of potash	12 grams
Sydenham's laudanum	10 "
Tar water	300 "

Dissolve. Use 2 or 3 tablespoonfuls to the litre of warm water, and inject night and morning. The injection should last from 5 to 6 minutes.—*Gazette de Gynécologie*, June 1, 1888.

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SATURDAY, JULY 28, 1888.

WHEN SHOULD DIGITALIS BE PRESCRIBED?

Bearing in mind the physiological and therapeutic actions of digitalis, it is a matter of less difficulty to give the principal indications for it in the organic affections of the heart. As was pointed out last week, one of the indications for the use of the drug is the period of the cardiopathy. But before considering the question, when digitalis is useful, it is well to know when it is injurious or useless. There may be, says Huchard, a cardiac *lesion*, but still no cardiac *malady;* the state of cardiac contractility, which should regulate the employment of digitalis, is normal. In the period of eusystolism, characterized by normal and almost perfect ventricular systoles, digitalis is useless. Here hygiene should be the only treatment. Suppose we have an aortic or mitral lesion, with hypertrophy, and the attendant physical signs, with frequent epistaxis, repeated accesses of acute pulmonary hyperæmia, congested face, injected eyes, ringing in the ears, heavy head, headache and cephalic throbbings, vertigo, the arteries beating with violence, the radial pulse full, vibrating, resistant, and there are frequent, often painful, sometimes nocturnal palpitations, causing more or less rebellious insomnia. Digitalis is injurious in these cases, says Huchard, for the patient has entered into the period of hypersystolism, characterized by increased arterial tension, and the drug will increase his distress. Here, too, hygiene and diet are the remedies, or the bromides, aconite, and even arsenic, with perhaps leeches, or venesection.

For the same reason digitalis should not be given in the first phases of what Huchard terms arterial cardiopathies. For a long time he has insisted on the capital distinction between valvular cardiopathies and the vascular or arterial cardiopathies. The latter are nothing more nor less than the localization of arterio-sclerosis on the heart, characterized by increased arterial tension, which is the cause and not the effect of the sclerosis. In the early periods of arterio-sclerosis of the heart digitalis should be employed only with the greatest reserve, since, by increasing vascular pressure, it may lead to cerebral hæmorrhages, and by it also the nocturnal palpitations are increased, dyspnœa becomes more intense, and anginous accesses may be provoked.

After the period of hypersystolism, aortic patients, less frequently mitral, pass into the period of hyposystolism or asystolism. Here digitalis is useful. It produces the best effects. But there may come a time when the effects are no longer obtained, when the systole is soft and without energy, or the cardiac cavities are distended, when there is circulatory obstruction with peripheral œdema and visceral congestions, and diuresis remains below normal. Here digitalis is injurious, and for two reasons: 1. The cardiac muscle is profoundly altered, and digitalis can no more act on it than can electricity on a cut nerve. The drug here becomes an agent of prognosis and diagnosis, for it shows the existence of profound degeneration of the myocardium and of a true paretic state of its fibres (amyocardia). 2. In cardiac patients, in the subsequent alteration of the organs, there are two distinct periods: the one of venous stasis, the other of irremediable sclerotic lesions, in which cardiac drugs are given in vain. Still, in this last period caffeine in large doses may give very remarkable results.

Nevertheless, there are varieties in this cardiac paralysis, and there are degrees in this powerlessness of digitalis. The amyocardia (cardioplegia of Gubler) may be temporary, as may be the powerlessness of the drug. It should be remembered always that *if we wish to strengthen the heart we must facilitate and lighten its work.* Before prescribing digitalis we must empty the too full venous system, and this is best accomplished by venesection, local abstraction of blood, or by re-

peated purgations. Want of success with digitalis does not always depend, then, upon the disease, nor upon the patient, nor on the remedy, but upon the physician, who has not placed his patient in the most favorable conditions for the action of the drug.

At an advanced period of heart disease we often find albumin in greater or less quantity in the urine. This is not an absolute contra-indication to the employment of digitalis. The dangers of the administration of active medicines in renal affections have been much exaggerated, though that there are dangers no one can deny. But they demand prudence, not the doing away with drugs. That digitalis can be safely used in these cases is probably due to the fact that it is not eliminated by the kidneys, as was shown some two years ago by Lafon. While albuminuria is not a positive contra-indication to the use of digitalis, therefore, the drug should be used with caution in these cases, in moderate doses for two or three days, and its action carefully watched.

The seat of valvular lesions is an indication as to the use of digitalis. In aortic stenosis, for example, we know that the cardiac contractions and the pulse are slow. Why then should we prescribe a drug that will slow them still more, and that will act very much as the malady does? By doing this we expose the patients to the dangers of digitalism. In aortic insufficiency the diastolic rest of the heart is already long enough; digitalis makes it longer, and increases the already high arterial tension caused by the disease. Why add to the already injurious effects of the heart disease? asks Huchard. In mitral insufficiency it should be prescribed only in cases of great cardiac irregularity, or of confirmed hyposystolism. In pure mitral stenosis it often causes bad effects. It should not be forgotten that mitral and aortic stenosis are the two cardiopathies that remain latent for a long time, and demand active treatment late. There is no doubt that in aortic affections, and especially in Corrigan's disease, digitalis is often contra-indicated for a long time: it raises arterial tension in an affection in which this is already exaggerated; by augmenting the suddenness of the systole it gives to the blood-waves violent and repeated oscillations, which added to the high tension may cause cerebral hæmorrhages; it prolongs the already augmented diastolic period; finally, it contributes, by its vaso-constrictor action, towards increasing the visceral and peripheric anæmia caused by the disease. In aortic affections more than in any other it is wrong to localize the lesion at the aortic valve, and then to take no account of the localization in the treatment.

But, says Huchard, the knowledge of the orifice affected is of secondary importance only for the indication of the drug. The therapeutic indication must be found in the cardiac muscle, as has been admirably expressed by Stokes, and endorsed by Laënnec. The situation of the cardiac souffle, its intensity and its absence furnish no indications for the administration of digitalis; it is the state of the heart muscle and of the vessels, their feebleness (cardio-vascular asthenia), and asystolism, that demand the use of digitalis. Let us understand what is meant by asystolism, as Huchard uses the term. There exists in all cardiac diseases a period intermediate between hypersystolism and asystolism, which Huchard calls hyposystolism. Now let us suppose a case: we have a patient in whom some months ago there were all the signs of normal or even exaggerated compensation; the præcordial shock was strong, vibrating, and well limited, the apex slightly lowered, urine normal in quantity, no trace of visceral congestion, and no œdema of the lower limbs. He now comes with slight perimalleolar œdema in the evening, becomes breathless easily, and has palpitations and a sensation of fulness of the chest. Examination shows slight congestion of the liver, which is painful on pressure, pulmonary hyperæmia and œdema; the cardiac contraction is soft, unequal and irregular, the cardiac impulse more extended, more diffuse, less sensible, the apex displaced, and cardiac dulness increased transversely; the first sound of the heart is more or less dull or weakened, the second a little loud in the region of the pulmonary orifice and to the right of the sternum. The pulse is feeble and undulating, the jugular veins swollen and prominent, and the urine scanty. In this case there should be no hesitation in regard to prescribing digitalis, for, says Huchard, there are three capital indications: feebleness of cardiac contractility, lowering of arterial and increase of venous tension, and scanty urine coexisting with peripheral œdema or visceral congestions. The urine furnishes indications for the administration of digitalis: if it becomes uratic, and falls below 800, 500, or to 200 grams a day, digitalis should be given. In giving digitalis in cardiac affections

we should examine the urine as carefully as we do the thermometer in fever.

In either asystolism or hyposystolism there may be three causes of error in regard to the contra-indication of digitalis: 1. The cardiac beats may be tumultuous and violent, the impulse of the heart becoming energetic for a few moments; but examination a few minutes afterwards may show that the energetic systoles are followed by weak or aborted and precipitate ones, constituting the cardiataxic asystolism of Gubler. Digitalis should be prescribed as a tonic and regulator of the circulation. 2. We may have a patient in whom the dilatation of the heart-cavities strikes against the thin and emaciated thoracic walls, giving the false sensation of energetic and violent beats. Here the clinical error is doubled if a therapeutic error be made by withholding digitalis on account of supposed exaggerated compensation. 3. In asystolism the dilated right heart is in immediate relation with the thoracic wall; if it lie close to the diaphragm the beats may be communicated to the whole epigastric region. The extent of these beats is no indication of their force; they will be found feeble, undulating, and scarcely appreciable, and digitalis should be prescribed.

To recapitulate with regard to valvular lesions: Digitalis is useless in the period of eusystolism, when the lesion is compensated; it is injurious in the hypersystolic period, when the compensation is exaggerated; it is efficacious in the hyposystolic or period of transient asystolism, when the cardiac muscle and the vessels are suffering from asthenia, and when there are œdemas, visceral congestions, dropsies, and the heart beats softly and feebly; in the period of definite asystolism, or of amyocardia, when the cardiac muscle is profoundly degenerated, digitalis is sometimes useful, it may be useless, or it may be injurious. It is in these cases sometimes that caffeine in large doses gives such signally good results.

There are still other classes of cases in which digitalis is used, but the consideration of these must be deferred.

THE CROONIAN LECTURES ON ANTIPYRETICS.

In his Croonian Lectures this year DR. DONALD MAC ALISTER has complemented his Gulstonian lectures of last year, in which nothing was said in regard to the treatment of fever. While his subject for this year was "Antipyretics," the lecturer discussed the light thrown on the nature of fever by the means employed successfully for its treatment, and the lessons in the treatment of fever that flow from a right understanding of its nature.

In his first lecture Dr. Mac Alister went over the physiology of thermolysis. It has been found by Masje that probably 60 per cent. of the heat leaving the body does so by radiation. In the Zurich Hospital the true laws of skin radiation have been worked out, and have been found to be strikingly suggestive. A part of the skin suddenly uncovered naturally becomes cooler, but its radiation increases steadily as the temperature falls, until a certain limit is reached. Radiation is more active as the processes of nutrition and metabolism are more active. There are reasons for believing that the radiating power of the skin, which can be shown to depend on its physical and chemical constitution, is subject to nervous control; and in this way what seems to be the most purely physical of all the thermolytic processes is really under the control of the thermal nervous system.

In his second lecture Dr. Mac Alister discussed what may be termed the teleological pathology of pyrexia. It is admitted that fever is a sign of disorder, of disturbance, of a physiological function or functions. The author has some words for those that look upon high temperature in the infective diseases as a salutary process, and suggests that fever may be more salutary to the bacteria than to the patient. Nor is the view correct that high temperature is purely mischievous, and the efficient cause of all the dangers that threaten a fever-patient, since it must be admitted that many of the morbid phenomena accompanying fever occur independently of it. "High temperature," says Dr. Mac Alister, may or may not connote pyrexia. Some of the ways in which temperature may be raised are harmless, and there is good reason to believe that non-pyrexial elevation of temperature is not in itself a danger. Volkmann and other surgeons have recorded cases of aseptic operations and injuries in which temperatures as high as 105° were accompanied by no loss of appetite, no distress, and no symptom that could be characterized as febrile.

In the third lecture Dr. Mac Alister turned from the consideration of high temperature as the danger in the infective diseases to the infection, and then to the question of treatment. In regard to the infection he thought it obvious that if the grave morbid phenomena could not be set down to the pyrexial temperature we must attribute them in a large measure to the action of the specific virus or poison. Since the chief pathogenic factor in the specific fevers is apparently the specific virus, our first search must be for a specific remedy capable of destroying or counteracting the virus. Such are quinine and salicylic acid in malarial and rheumatic fevers, and their claim to be antipyretics rests on their specific action to a large extent. But the ideal febrifuge, which will allay fever by restoring to healthy function the disordered thermotaxic mechanisms, thrown out of gear by the action of the morbid poison, has yet to be found. The next best thing to such a drug is to discover a mode of treatment that shall act vicariously for the thermotoxic mechanism, and compensating for its lost control over the thermal functions.

EDITORIAL NOTES.

HÆMORRHAGIC INFARCT OF A UTERINE MYOFIBROMA.—In *Vratch*, No. 9, 1888, MME. PROKOPIEVA reports a case of this rare condition in a woman æt. 34 years, nullipara. The tumor was removed through the abdominal wall, and was as large as a five or six months' fœtus. On the surface was a round spot, deep red at the periphery, but clearer toward the centre. On section this was seen to be prolonged in the form of a cone in the centre of the tumor. Microscopic examination showed that the tumor had the structure of a myofibroma, with hæmorrhagic infarcts (with destruction of the blood-globules and of other cell elements at the centre of the infarct, and marked hyperæmia at the periphery).

The patient said that the tumor was first noticed a year before the operation. At this time she felt a sudden sharp pain in the pelvis, and she was forced to remain in her bed for three weeks. Then the abdomen began to enlarge, and the growth of the tumor was very rapid. At the time of the operation the circumference of the abdomen was 90 cm. The uterine cavity was enlarged. There was slight mitral insufficiency, which was in favor of the embolic origin of the infarct. Before being operated on the patient remained in the hospital six weeks; the abdominal pains persisted, and increased at the menstrual epochs. Among the prominent clinical symptoms in this case were the pains. Laparotomy showed that the pains were exactly at the seat of the infarct.

A LEECH IN THE LARYNX.—In a recent number of the *Revue de Médecine et de Pharmacie Militaire* is an account of a case in which a leech got into a man's larynx, without his knowledge, and caused symptoms for which DR. GODET and the other medical attendants could not account. The patient suffered from hoarseness and a sensation of a foreign body in the larynx for some three weeks, but he had no serious dyspnœa, and nothing could be seen with the laryngoscope. Finally he began to spit blood, and then he felt something move in his throat. On the 23d day, after the patient had made a violent expiratory effort, Dr. Godet saw the leech fastened in the subglottic part of larynx. Having no proper laryngeal forceps at hand, he divided the thyroid cartilage in the middle line, and the leech was easily removed. The cartilage was closed with two sutures, and perfect union resulted. The patient's voice was not affected by the operation.

AN UNUSUAL CAUSE OF DEATH.—The *Memphis Medical Monthly*, of July, has the following, from the Memphis *Appeal* on a coroner's jury's report: "The investigation developed the fact that the dead woman's skull was cracked, exposing the brain. The mother, husband, and little child of the dead woman were all examined by the jury, but their evidence failed to show the cause of the strange opening in the skull. There being no further evidence in sight the jury retired for deliberation, and returned its verdict, which was that the woman died suddenly from a natural cause, produced by expansion of the skull." The county officials, says the *Memphis Medical Monthly*, allow but $5 for post-mortem examinations, whatever the character of such may be, and for this reason the coroner is not able to obtain the service of a competent physician.

PHYSICAL EDUCATION OF THE BLIND.—A sound system of education has been developed by DR. CAMPBELL at the Royal Normal College for the Blind. A blind teacher gives instruction in

singing, and connected with the College is a gymnasium, swimming bath, cycling track, and a boating lake. The College, says the *British Medical Journal*, is now educating 160 students, but it effects more than that for the public good in training a large number of teachers, who go thence to all parts of the world. A Royal Commission is now inquiring as to the educational needs of the blind, and the best means of providing them.

A MEDICAL FACULTY FOR SERVIA will, it is said, be soon established. Belgrade has a University that contains all the faculties except that of medicine. Servian students have been hitherto obliged to go abroad for their medical education. Most of them have gone to Vienna or to Paris, since the Austrian and French degrees are recognized by the Servian Government. They that have gone to Germany and other foreign countries, however, had to pass an examination before a medical commission in order to obtain the right to practice.

NEW TEST FOR BISMUTH.—To the Society of Chemical Industry MR. F. B. STONE recently showed a very delicate test for bismuth. It depends on the fact that a strong solution of iodide of potassium produces a bright yellow color when added to a very dilute solution of sulphate of bismuth, containing only a small quantity of free sulphuric acid. One part of bismuth in 1,000,000 will show a distinct coloration.

A MARINE BIOLOGICAL LABORATORY has been completed at Plymouth, England, overlooking the Sound. The Marine Biological Association of the United Kingdom was founded "to promote accurate researches leading to the improvement of zoological and botanical science, and to an increase of knowledge as regards food, life-conditions, and habits of British food fishes and mollusks."

SIX CHILDREN AT A BIRTH.—DR. VASSALI, of Lugano, reports the case of a woman that gave birth to six children at one time, about the 115th day of pregnancy. There was only one placenta. The mother had previously given birth to seven children in two labors.

A PROFESSIONAL WEDDING.—The marriage of Professor Joseph Jules Déjerine, of Paris, and Mlle. Augusta Klumpke, Interne of the hospitals of Paris, is announced.

THE MARGARINE ACT IN ENGLAND seems to have had a salutatory effect upon the adulteration of butter, for Mr. J. Carter Bell, the Cheshire County Analyst says that of fifty-one samples one only was adulterated.

DR. ENGELMANN, Professor of Comparative Physiology and Histology in the University of Utrecht, has been appointed successor to Professor Donders in the chair of Physiology. Dr. Engelmann's chair is taken by Dr. Pekelharing.

DR. PAUL LOYE, tutor in Forensic Medicine in Paris, is to go to Germany and Austria to study the organization of that branch of study in those countries.

THE NUMBER OF MEDICAL STUDENTS AT GREIFSWALD is on the increase, and the clinical students for this summer's session number more than 200.

THE JEFFERSON MEDICAL COLLEGE announces that with the winter session of 1890 a three years' systematic obligatory curriculum will begin.

THE LEHIGH VALLEY MEDICAL ASSOCIATION will hold its eighth annual meeting at Paxinosa Inn, near Easton, on August 15.

DR. RAYMOND, of the Paris Faculty will go to Russia to study the teaching of nervous diseases in the Russian Universities.

THE HOSPITAL SUNDAY COLLECTIONS in London this year amounted to £37,475; last year the amount was £37,000.

THE TRI-STATE MEDICAL ASSOCIATION of Mississippi, Arkansas, and Tennessee will meet in Memphis on November 13.

DR. DIANOUX has been appointed to the recently established chair of Clinical Ophthalmology at Nantes.

PROFESSOR PREYER, Director of the Physiological Institute in Jena, has been called to Berlin.

THE MISSISSIPPI VALLEY MEDICAL ASSOCIATION will meet in St. Louis on September 11.

DR. FR. LÖFFLER has been appointed ordinary Professor of Hygiene at Greifswald.

THE NUMBER OF MEDICAL STUDENTS IN LEIPZIG is now 783.

PROFESSOR SCANZONI has resigned his position at Würzburg.

SOCIETY PROCEEDINGS.

American Otological Society.

Twenty-first Annual Meeting, held at Pequot House, New London, Connecticut, July 17, 1888.

MORNING SESSION.

The Society was called to order by the PRESIDENT, DR. J. S. PROUT, of Brooklyn.

Drs. Green, Theobald and Carmalt were appointed as the Business Committee.

Dr. E. Williams, of Cincinnati, was elected an honorary member of the Society.

Dr. W. H. Carmalt presented the report of the committee of conference on

THE CONGRESS OF AMERICAN PHYSICIANS AND SURGEONS.

The report was accepted and it was decided that when the Society adjourns, it adjourns to meet at the Arlington Hotel, Washington, D. C., September 18, 1888, at 11. A.M. On motion of Dr. Green it was decided that the meeting should be strictly for scientific matters and should not be regarded as a business meeting; that it should not take the place of the annual meeting.

Two papers by Dr. S. Sexton, of New York, entitled *Periostitis Externa of the Mastoid* and *Some of the Indications for Excision of the Drumhead and Malleus*, were read by title.

DR. CHARLES H. BURNETT, of Philadelphia, reported

A CASE OF AURAL VERTIGO (MENIÈRE'S DISEASE) RELIEVED BY EXCISION OF THE MEMBRANI TYMPANI AND MALLEUS.

The patient was a young, unmarried woman, 37 years of age, who six years previous had been under treatment for chronic naso-pharyngeal catarrh and chronic catarrh of the left middle ear, accompanied with hardness of hearing, tinnitus aurium and a sense of fulness in the affected organ. Treatment of the catarrhal disease of the ear produced no benefit. After the lapse of six years, the symptoms already named grew worse, and there was superadded marked aural vertigo. The membrani tympani in the line of the malleus handle were found adherent to the promontory, and the consequent retraction of the entire chain of bones was held to be the cause of the aural vertigo and the sense of fulness, and of the tinnitus. The operation of excision of the membrana tympani and the malleus was performed under ether, May 21st last, with entire and immediate relief to the aural vertigo (which before had often been sufficient to cause the patient to hold to a lamp-post for support), and to the sense of pressure and tinnitus, which good result has been maintained to the present time. The hearing was practically unaffected by the operation. The incus was detached from the stapes but could not be removed, as it slipped into the attic, and grappling for it is not advisable on account of the risk of irritation. Its removal, furthermore, would have no effect in the result of the operation.

DR. J. O. TANSLEY, of New York: I have now under my observation a girl on whom this operation was performed some eighteen months ago. When she came to me the whole internal canal was filled with polypi and she presented serious brain symptoms. I took out all the polypi and found a portion of the drum remaining, and above a localized necrosis into which a probe passed at least ¼-inch. The patient has been under observation every day for two months. The local necrosis is healed and she is doing well. There are still some brain symptoms. It seems to me that this is a very serious operation, and I should hesitate some time before performing it on account of the results that might occur. In this case the result seems directly traceable to the operation.

DR. C. H. BURNETT: My patient did not remain in Philadelphia, but I was informed that two or three weeks after I saw her a discharge appeared. I think that there is still a slight discharge, but the membrane is forming. In another case a slight discharge appeared soon after the operation, but ceased after the membrane had reformed. The case reported by the last speaker was not one of the class to which I have alluded. The operation was evidently not properly performed if there remained a portion of the membrane and there was neurosis. I have not found this a dangerous operation. No one has reported bad results from this operation properly performed.

DR. S. SEXTON, of New York: I have performed this operation between fifty and one hundred times in the past few years, and have obtained decided benefit in a number of cases of tinnitus and other subjective symptoms. I have known of no case in which there was aggravation.

DR. S. SEXTON then exhibited *A New Portable Battery for the Storage of Electro-motor Force*, and *A New Head Lantern for the Employment of Electric Light in Surgery*.

The battery was made at his suggestion by the River and Rail Electric Light Co., of New York. It consists of three cells and will light a six-candle electric light. The lantern is a modification of that of Trouve, but much lighter and having a non-conducting base. Such a light is almost necessary in operations on the ear when ether is used as an anæsthetic. The battery will work continuously for twenty-four hours and will retain its power for several weeks or months. It may be charged by a dynamo or by twelve gravity cells. When not in use the storage battery may be kept in connection with the gravity cells.

DR. A. H. BUCK, of New York, read a paper on

REFLEX INFLUENCES IN THE PRODUCTION OF NASO-PHARYNGEAL CATARRH.

We know little of the direct exciting causes of naso-pharyngeal catarrh. The most common indirect cause is chilling of the surface of the body. According to certain authorities affections of the teeth should rank next in order of frequency. The author had, however, seen very few cases in which dental disturbance played the part of a promoter of naso-pharyngeal catarrh or of aural disturbance. Some of those indirect causes which he had observed were then enumerated. Irritation of the gastro-intestinal canal is in not a few instances a strong exciting cause of naso-pharyngeal catarrh and of all the aural disturbances growing out of such a catarrh. A male 45 years of age had for years been more or less a sufferer from naso-pharyngeal catarrh with tinnitus aurium and slight impairment of hearing, and more recently had begun to suffer from feeble digestion. He noticed that after indulgence in certain articles there would be abdominal discomfort, and at the same time marked exacerbation of the naso-pharyngeal catarrh. So long as the offending substance was in the stomach, there was only a slight sense of discomfort, but in the course of three or four hours a slightly painful peristaltic movement would set up in the bowels. Simultaneously the secretion from the vault of the pharynx would become unpleasantly active and the tinnitus would increase. This condition would last for an hour, and then the naso-pharyngeal catarrh would return to its usual state. These attacks were accompanied with the escape of large quantities of gas by eructation. In many patients, usually men between 40 and 60 years of age, where we have reason to believe that the gastro-intestinal tract is habitually in a state of greater or less irritation, we find the faucial mucous membrane red and swollen. In these cases the disease which claims chief attention is the gastro-intestinal affection.

Reflex influence involving the vault of the pharynx and the ear may emanate from more distant sources. A lady 40 years of age complained of distressing tinnitus involving both ears. There had been mild naso-pharyngeal catarrh from time to time for many years. At times she was almost entirely free from tinnitus. I always succeeded in giving prompt relief by applying a moderately strong solution of silver nitrate with a mass of absorbent cotton to the vault of the pharynx.. After a time this failed to give relief. It was then learned that for many years she had suffered with pain in the pelvic regions and back, and that at this particular time she was suffering in a more marked degree. A specialist was then consulted, and it was found that there was retroversion of the uterus and subacute parametritis. These conditions were removed and the tinnitus disappeared without treatment to the vault of the pharynx.

The author stated that he had spoken of these as indirect causes, that is, as factors competent to aggravate a preëxisting but perhaps latent catarrhal disease; but he saw no reason why these reflex influences may not, in certain cases, play the part of direct exciting causes. He considered it impossible to demonstrate the correctness of this belief, and preferred to adopt the view which assigns to them a less independent rôle.

DR. S. D. RISLEY, of Philadelphia: It is pretty generally admitted that nasal and pharyngeal disease are especially liable to occur in persons of a gouty diathesis. Naso-pharyngeal is one of the most uniform manifestations of lithæmia. From the symptoms detailed in regard to the first case of Dr. Buck, I should suggest that the digestive disturbance was probably associated with a lithæmic condition.

DR. C. H. BURNETT: I have seen a number of cases of tinnitus without deafness due entirely to dyspepsia. The use of nitrate of silver has been referred to. While this may be of service in other locations, I think that it is the worst application that can be made to the nose or the naso-pharynx. Its use will be followed sooner or later by sclerosis and atrophy.

DR. S. SEXTON: I have seen many cases in which irritation in the mouth has been the cause of naso-pharyngeal catarrh and aural symptoms. A lady was brought to me with intense pain in the ear and the head. There was nothing in the condition of the ear to account for these symptoms. Examination of the mouth showed that she was wearing a plate to bring the teeth closer together. The gum was intensely inflamed, although the patient complained of no discomfort. The removal of the plate caused a disappearance of the pain in the ear and head.

DR. J. F. NOYES, of Detroit: This paper brings up the fact that it is important that in our special practice we should consider general practice. I have always recognized those so-called reflex causes, and have treated cases by searching out these causes.

DR. SAMUEL THEOBALD, of Baltimore: I think that where atrophy follows hypertrophic catarrh it is the result not of the application of nitrate of silver, but of the continuance of the catarrh.

DR. CHAS. J. KIPP, of Newark: I agree with Dr. Theobald as to the value of nitrate of silver. I rarely use it in a stronger solution than 20 grs. to the ounce, and neutralize it afterwards by salt water.

DR. HENRY D. NOYES, of New York. I have frequently noticed the connection between the lithæmic condition and certain affections not only of the naso-pharynx, but also of the external auditory canal. There are certain eczematous conditions associated with the gouty diathesis.

DR. A. H. BUCK read a paper entitled

A CONTRIBUTION TO THE ANATOMY OF THE ELEPHANT'S EAR.

The ear was exhibited and the interesting points indicated. The external auditory canal is imbedded in air-containing cells, and is 6½ inches long. The canal at the time of examination was filled with desquemated material. In the middle ear, the handle of the hammer seems to lie in a horizontal plane. It is not vertical, as in the human being. The anterior part of the drum cavity is completely cut off from the posterior part. The Eustachian tube comes up through a system of air-cells and opens through one of them close to the drum membrane. Under the floor of the tympanic cavity there are three septa making stall-like spaces. Two of these are quite long, six or seven inches. The labyrinth and other parts were not examined.

DR, HUNTINGTON RICHARDS, of New York, reported a case of

POLYPOID ANGIOMA OF THE EAR.

The patient, a girl 6 years of age, came under observation May 4, 1888, with profuse and badly swelling otorrhœa, unaccompanied by pain, and dating only from the preceding February. Hearing seemed good. No bleeding from the ear had ever been observed. The general health was excellent. Examination of the affected ear revealed a polypoid mass almost occluding the canal. The color was deep purplish red. A considerable portion of the tumor was at once removed with the snare, and the remainder of the growth was extracted on the following day, leaving a small pedicle attached, seemingly, to the outer surface of the drum membrane, close to the prominence formed by the short process of the hammer. This stump was cauterized with chromic acid. Hæmorrhage from the cut surface of the growth was unusually profuse at both operations. The child's hearing is now excellent, although both membranes are depressed and of a dark grayish-red color. The removed growth was pronounced to be an angioma. Three micro-photographs, showing the appearance of the growth, were shown.

DR. RICHARDS also reported a case of

"FALSE-DRUM MEMBRANE."

The patient, a man 21 years of age, was totally deaf in the affected ear. There was a vague history of an attack of otitis media in early childhood. The other ear presented the common appearance of otitis media purulenta chronic. Examination of the ear that was not discharging showed a membrane occluding the canal. It differed from the normal drum membrane in color, shape, relation of its plane to the long axis of the canal, and apparent thickness. It varied little in color from the skin lining the canal. The surface was perfectly smooth.

A triangular opening was made through this membrane. This caused no pain. Through this opening it was seen that there was no drum membrane, but the inner wall of the tympanic cavity came into view. The hearing was only slightly improved. When seen a few days later no discharge had appeared. Since that time he has not returned to the Infirmary.

DR. SAMUEL SEXTON: I have seen several such cases as that described in the last paper. In a case seen last year I removed the membrane and then took out the malleus and incus. This case made a good recovery. The improvement in hearing was decided. I would suggest this operation in such cases as a possible means of improving the hearing for it opens up the tympanic cavity which is a good condenser of sound; and in the second place to prevent the accidental occurrence of inflammation in these parts when it might be difficult to obtain relief.

DR. T. Y. SUTPHEN, of Newark: I have seen one or two cases of this trouble, which seems to be due to cicatricial closure of the external canal. It seems to me that the condition would be best spoken of as a cicatricial closure of this canal.

DR. A. MATHEWSON, of Brooklyn: A lady was under my care for some time with an eczematous condition of the external meatus. She then passed from observation. Some time later she presented herself with a disk-like closure of the external canal. This was not complete as there was a small opening in the centre. I dilated this opening with laminaria bougies and the ear was left in perfect condition.

DR. CHAS. H. BURNETT: I have seen several of these cases of dermoid diaphragms in the canal. Three of these were in private practice. One was in an old man and it remained imperforate during the whole time he was under observation. The other cases were perforate when they came to me. There was slight discharge which I checked and the perforation healed. In one case the discharge returned after a short time and the perforation reappeared. Under treatment it healed and I have reason to believe has remained closed since, a period of four or five years. In the other case remained closed for a year, when the opening returned with slight discharge. The discharge ceased under treatment, the opening closed and has remained closed.

EVENING SESSION.

DR. J. B. EMERSON, of New York, read a paper on

THE FLEXIBLE CATHETER AS A DRAINAGE TUBE; WITH CASES.

The author cited several cases exhibiting the use of the flexible catheter as a drainage tube. With deeply-seated inflammation of the auditory

canal or mastoid cells, maintenance of drainage through a fistula is a necessity; and to prevent closure of the fistula either by granular growth or natural healing is important. Dr. Emerson recommends the use of the flexible catheter as generally the best means to employ and states his reasons to be, the comparative comfort and safety, together with convenience of control by both surgeon and patient. The efficiency observed in his use of the flexible catheter was also referred to.

Dr. Chas. J. Kipp, of Newark, reported

THREE CASES OF TRANSIENT BILATERAL HORIZONTAL NYSTAGMUS IN CONNECTION WITH PURULENT INFLAMMATION OF THE MIDDLE-EAR.

Case 1.—A young man, 21 years of age, had had otorrhœa seven or eight years previously. Three months before coming under observation he had an acute exacerbation and suffered intensely with pain in the ear and head. The otorrhœa much diminished. Two or three weeks later he came stating that he saw objects double, was dizzy, and could not walk. There was marked nystagmus in a horizontal direction. The vertigo and nystagmus continued four days. With the cessation of the nystagmus the vertigo disappeared.

Case 2.—A young man treated six years previously for acute otitis media purulenta, ending in recovery, appeared in March with an acute attack. Paracentesis was performed. The pain, however, continued for a long time. Finally swelling developed behind the mastoid and this was accompanied with several epileptiform attacks. One day, pressing on the swelling, pus poured from the canal. With this there was a sudden jerk of the head and nystagmus. The latter continued for about ten minutes. This was produced every time pressure was made on the mastoid. The mastoid was subsequently opened. Since then there has been improvement.

Case 3.—A young man, after exposure, was seized with intense pain in the ear, followed by otorrhœa. When he came under observation there was great pain. This was not relieved by treatment but continued two or three weeks. Then a swelling appeared below the ear. This was incised and a large quantity of pus evacuated, with relief to the pain. Some days later while washing out the cavity, the fluid came through the ear when considerable force was used. At the same time there was a jerk of the head and nystagmus continuing several minutes. This could always be produced by making a forcible injection.

Dr. O. D. Pomeroy, of New York: Reference has been made to epileptiform symptoms in one of the cases. I have recently seen a case of epilepsy in which the exciting cause was suppuration of the middle-ear, With recovery from the ear disease the convulsions ceased and have not returned.

An Improved Aural Snare was exhibited by Dr. J. O. Tansley, of New York.

A paper by Dr. S. Sexton, New York, on *Foreign Bodies in the External Auditory Canal*, was read by title.

The following were elected

OFFICERS FOR THE ENSUING YEAR:

President—Dr. J. S. Prout, of Brooklyn.
Vice-President—Dr. Gorham Bacon, New York.
Secretary and Treasurer—Dr. J. J. B. Vermyne, of New Bedford, Mass.
Committee on Membership—Dr. A. Matthewson, Dr. D. B. St. John Roosa, and Dr. John Green.

Delegate to the Congress of American Physicians and Surgeons: Dr. W. H. Carmalt, New Haven. Alternate, Dr. G. Bacon, New York.

The Society then adjourned to meet at the Arlington Hotel, Washington, D. C., Tuesday, Sept. 18, 1888.

Medical Society of the District of Columbia.

Stated Meeting February 15, 1888.

The President, T. C. Smith, M.D., in the Chair.

Dr. D. S. Lamb presented the specimen and raed the history of a case of .

TUMORS OF GLANDS,

which he thought were possibly syphilitic. The case was last attended by Dr. C. A. Norton, a licentiate of the Society, who furnished the following history: J. E. D., white, age 36, father of five children, three of whom died in infancy. He had been a farmer; latterly a coal dealer. Unfit for business for last two years. Was confined to house for last three months. Died February 7, 1888. Dr. N. had seen him only for the three days before his death.

There was much emaciation; body in a cold sweat; pulse 98, feeble, intermittent; temperature 101.8;° respiration 19, labored; skin a dirty yellow, smooth and shining. Lips and mucous membrane of mouth pale; tongue dry and brown, edges pale; parotid and submaxillary glands enlarged, especially the left; abdomen swollen, not tender; large, hard, well-defined mass in region of stomach; spleen large; inguinal glands enlarged, in the left groin as large as the fist; feet and legs swollen; sexual organs normal. Had had a feeling of burning in stomach for over a year. Much thirst; after taking fluids, vomited watery, brown, foul smelling liquid. Bowels loose; stools thin, streaked with blood, and pale green pus; often involuntary. Urine pale, cloudy, normal in quantity; involuntary. Patient restless; had pain all over; some dysphagia.

His grandfather died at 50 of cancer of liver;

grandmother at 70 of ulcer of stomach; father and mother alive and well; had thirteen brothers and five sisters, all alive but six who died of infantile diseases. Patient was not a drunkard, but a great smoker; contracted syphilis about fifteen years before death, from a colored servant in the family. Was treated for over a year and said to be cured. Three years afterwards had sharp pain in left hip, extending to back and legs; had to stop work; often had to walk the streets to ease the pain; could not sleep. Had much pain in bones of face and head. Was treated again for four years without benefit. Began to lose flesh; stomach became weak and food distressed him.

Post-mortem examination by Dr. D. S. Lamb. Head and spinal cavity not examined. Lymphatic glands near angle of jaw enlarged. Both pleural sacs contained a large quantity of serum; so much in the left sac that the lung was nearly collapsed; some old adhesions on right side. Lungs themselves normal except several hard white nodules, about one-eighth inch in diameter, under the periphery; apparently obsolete tubercle. Heart appeared normal; not opened. There were a number of firm flat masses on posterior surface of sternum and similar ones on each side of spine between 4th and 5th ribs; doubtless enlarged glands. Liver large, congested. Gall bladder distended with pale green bile. Spleen enlarged, about 20 oz. in weight, and congested. Pancreas normal. Stomach showed some congestion towards pylorus and contained some mucus. Small intestines normal. Large intestine contained scybala. Kidneys large; their cortex pale. Bladder distended with urine. Prostate normal. Lumbar, iliac and inguinal glands much enlarged and firm. Penis showed no scar.

DR. SMITH was one of those physicians who had seen the patient from whom Dr. Lamb had removed the glands. He had consulted him about four months ago, when the glands in the left groin were enlarged; those in the right only slightly. He came two or three times but there was no improvement, and as operative interference was suggested, he was frightened and never returned.

DR. ACKER had examined the specimen and thought it was lymphadenoma.

[The members of the committee on microscopy reported on the glands as follows:

DR. ACKER: I find that the cells are increased in number, and the reticulum thickened. Some of the cells are large and multinuclear. In some of the sections the sinuses and follicles cannot be seen. The adventitia of the vessels is thickened. The growth is, I think, a hard lymphadenoma or lymphosarcoma (Ziegler).

DR. SCHÆFFER: I think the tissue is an enlarged and infiltrated gland, showing the stroma and round cellular elements—no traces of malignancy].

DR. T. C. SMITH presented the stomach of a a young man who had committed

SUICIDE BY TAKING "ROUGH ON RATS."

History.—A young man, æt. 19, ate his breakfast about 9 o'clock February 14, and then left home. About fifteen minutes afterwards he returned with a box, procured a glass, and went to the bath room. He went out again, but returned in about an hour and requested his brother to go to work for him. Soon after he began to vomit, and the vomiting soon became incessant, and he fell to the floor from exhaustion. About noon he told his parents that he had taken "rough on rats." The family sent for Dr. Smith, but he was not at home, so they got Dr. Warwick Evans to go to see the patient. Dr. Evans saw him four hours after the poison had been taken. Emetics of zinc and ipecac, dialyzed iron in large doses, and stimulants were given. Dr. Smith saw him about 1.30 o'clock. He was then in collapse. Whisky was freely administered hypodermatically, and hot bottles were applied, but he died at 4.30 P.M., seven hours after taking the poison.

Dr. Tyler made the necropsy. The kidneys were congested. The stomach was hyperæmic, and seemed to be denuded of its mucous membrane as if it were gouged out with some mechanical irritant.

Dr. Smith had presented the specimen for the sake of exciting some interest in the discussion of the subject in order to see if the society could not take some action to prevent the sale of this article which had become the popular drug for the suicide.

DR. BERMANN: It is useless to try to regulate the sale of such poisons as long as the druggists are allowed to sell poisons, for anybody can go into almost any drugstore and get the most deadly poison by simply asking for it. The law to be effective should prohibit the sale of poisons except when authorized by a physician.

DR. BUSEY: What is the composition of "rough on rats?"

DR. SMITH: The principal constituent is arsenic, but some contend that it also contains phosphorus and ground glass. It cannot contain phosphorus because that drug cannot be kept in a dry state, as in this preparation. He thought the principal ingredient was arsenic, because the directions given on the label for poisoning are similar to those commonly given in arsenical poisoning.

DR. KLEINSCHMIDT had a case of poisoning by "rough on rats" about six months ago. He asked Dr. Patterson, who had made the post-mortem examinations in fifteen or twenty cases, what he thought the poison consisted in, and he expressed the opinion that besides arsenic and phosphorus it also contained some mechanical irritant. He also suggested that there was no

use in trying to save them by remedies, as all that took the poison died. His patient died, but he could not get a necropsy. The specimen presented has a graty feeling. He thought the appearance of the intestinal tract in such cases gave evidence of an inflammatory condition produced by some mechanical irritant. In his case after the vomiting had stopped there still remained gastritis, of which he died.

FOREIGN CORRESPONDENCE.

LETTER FROM PARIS.

(FROM OUR OWN CORRESPONDENT.)

Epistaxis of Brightic Origin—Talc in Infantile Diarrhœa—Value of Bichloride Solutions—Dangers of Intra-uterine Injections—Incontinence of Urine in Children.

At a recent meeting of the Société Médicale des Hôpitaux Dr. Gaucher read a paper on *Epistaxis of Brightic Origin*. These cases, he said, are very obscure, and the cause being unknown, it is often very difficult to arrest the hæmorrhage. A man aged 33 years, distiller, and alcoholic, was admitted into his ward in the hospital on the 20th of May last, with profuse hæmorrhage from the nose, which had been going on for three days and which had resisted plugging and the application of a blister to the hepatic region, in conformity with the recent theory that epistaxis is of hepatic origin. In the present case, however, Dr. Gaucher, suspecting a latent interstitial nephritis, examined the urine and found in it a great quantity of albumen. He prescribed an absolute milk diet and a mixture of the extracts of cinchona and of ratanhia. From that moment the hæmorrhage diminished progressively and on the 24th of May it had ceased entirely. It is therefore important, concluded Dr. Gaucher, that when one is in the presence of an epistaxis of an unknown cause, the urine should be examined. Dr. Huchard had under his observation for several years a patient in whom repeated attacks of epistaxis were the precursory signs of an interstitial nephritis which showed itself tardily. The patient was a man of 44 years, of gouty parents, and was gouty himself, presenting the characters of "arthritism." During his youth he had repeated attacks of epistaxis. In 1879 they were of a grave character, in 1882 one of the attacks was so severe that it was necessary to plug the nasal fossæ. It was only in 1883 that albumen commenced to appear in the urine. Since then the phenomena of interstitial nephritis dominated the scene. Transitory aphasia in 1884, dyspnœa and other uræmic troubles determined death in 1885. Dr. Huchard remarked that this case was interesting in regard to the repeated attacks of epistaxis and to the renal malady. The author added that arthritism is to the arteries what rheumatism is to the heart. It acts specially on the arteries, as it always determines arterial hypertension and arterio-sclerosis.

At the same meeting Dr. Sevestre, Physician to the Children's Hospital, brought to notice the efficacy of *Talc in Infantile Diarrhœa*. He tried this substance, which was first indicated by Dr. Debove, in 7 children in his ward affected with that disease. The talc was administered in daily doses of from 20 to 30 grams mixed in milk, which succeeded in the cases where the bicarbonate of soda and lactic acid were powerless. Three children were cured in from four to five days, in the four others the diarrhœa had diminished and then disappeared about the seventh day. All the children had increased in weight.

Dr. E. Laplace writes in the *Journal des Connaissances Médicales* that, after a series of experiments, he found that solutions of the bichloride of mercury, in the proportion of a thousandth part, do not completely kill the microörganisms with which they are in contact. He attributes this to the production, with the albumens of insoluble compounds of the albuminates of mercury. In adding to the solution of the bichloride of mercury some hydrochloric acid, the albumen contained in the serum of the blood is not precipitated. Nevertheless, as the hydrochloric acid may after a time form with the albumens insoluble products, Dr. Laplace has replaced the hydrochloric acid by tartaric acid. Acting on these data, the author recommends the following solution for the washing of wounds: bichloride of mercury 1 part, tartaric acid 5 parts, distilled water 1000 parts. For antiseptic dressings he recommends that the bandages, linen and cotton, should be steeped in the following solution: bichloride of mercury 5 parts, tartaric acid 20 parts, distilled water 1000 parts. The cotton should remain about two hours in this solution, and afterwards dried. Clinical experience has confirmed the efficacy of these antiseptic solutions, and in one case in which the subject was affected with a large abscess, after having opened and washed out the latter, a plug imbibed in the bichloride acid was introduced into the purulent cavity. At the end of six days there was no more pus, and from that time the cicatrization was effected without suppuration.

In the *Nouvelles Archives d'Obstetrique et de Gynécologie*, Dr. Mangin, while vaunting the utility of intra-uterine injections, both as a prophylactic and curative measure, indicates the accidents which these injections are liable to cause. These accidents are of three orders. 1. Accident of retention, 2. septic accidents, 3. nervous accidents. The first order may be explained by the slow absorption of the liquid injected and retained in the uterine or vaginal cavity. By the penetration of the liquid into the peritoneum by the Fallopian tubes. By the direct penetration into the circula-

tion, by the venous sinuses of the liquid injected. This variety is no doubt the most common and at the same time the most terrible. The septic accidents, constituted by shiverings followed by fever, simulating a fit of intermittent fever, appearing always after a uterine irrigation and ceasing only when the injections are suppressed, are manifestly in correlation with these injections. The nervous accidents, which are always incriminated as soon as any complication after an injection arises, should be looked upon as exceptional. After having fully described the mechanism of the three orders of accidents, the author states that the nervous accidents are without gravity. The same cannot be said of the toxic and febrile accidents, which ought and can be avoided by certain precautions, the principle of which are: the choice of a catheter by which the return of the liquid is insured, and attention should be paid not to raise more than 30 centimetres above the bed of the patient the recipient containing the liquid.

Dr. Harkin, whose note on the treatment of incontinence of urine in children was reproduced in the *Revue Obstétricale et Gynécologique*, thinking that this affection is due to a congestion of the medulla oblongata during the horizontal position in bed, has employed dry cupping, or scarifying, in several cases, to the back of the neck, or a blister of 6 centimetres by 10 was applied as high as possible to the back of the neck. This last measure was the most frequently employed, and it was very rarely necessary to have recourse to a second application. A. B.

DOMESTIC CORRESPONDENCE.

LETTER FROM NEW YORK.

(FROM OUR OWN CORRESPONDENT.)

Causation and Treatment of Summer Diarrhœa of Infants—Microörganisms of the Stomach and Intestines in Summer Diarrhœa—Microscopic Appearances of the Stomach and Intestines in Summer Diarrhœa—Digestive Power of Pepsin—Action of different Agents on the Pus Germ.

The May meeting of the Section of Pediatrics of the Academy of Medicine was one of unusual interest, and the principal feature of it was a paper by Professor Victor C. Vaughan, of Ann Arbor, Mich., on *Experimental Studies on Some Points Concerning the Causation and Treatment of the Summer Diarrhœa of Infants.* Without attempting any exhaustive consideration of the subject, he said he would express the views which his investigations had led him to adopt in a series of propositions.

The first proposition was that the factor most frequently operative in summer diarrhœa is found in the food of the infant. Heat operated in two ways. In the first place, a certain degree of heat was required for the fermentation of food before being taken into the body; this facilitating marked and rapid changes subsequently. In the second place, it depressed the nerve centres, so that the tissues lost their tone, and the normal power of resistance to toxic influences became impaired.

The second proposition was that the changes in the food which prove harmful are fermentative in character; or, in other words, due to microörganisms. It was a universally accepted fact that infants nursed at the breast were very much less liable to summer diarrhœa than those fed upon the bottle. In examining the reasons for this it was found that there were certain differences in the chemical composition of human and cow's milk; but this was not the most potent cause. It had been ascertained that milk taken directly from the healthy animal, whether the human being or the cow, contained no germs whatever; while after it had been allowed to stand for any length of time it invariably contained germs. Thus, he had found that milk taken fresh from the cow could be preserved indefinitely in a sterilized tube, while good market milk, purchased from a reliable dairyman, soon underwent coagulation when kept in the same way.

But if this were the case, why was it that infants nursed at the breast ever had cholera infantum or other diarrhœal diseases at all? This might be explained in several ways: In the first place, while a healthy woman's milk contains no germs, an unhealthy one's does; so that if the mother was not in a sound condition, her milk might be affected in the same way as cow's milk after standing for some time. There were, in addition, many other ways in which germs might find their way into the infant's system; as, for instance, from the breast of a woman who was not cleanly in her habits or who was suffering from sore nipples or diseased breast. Still again, few of the articles which infants in tenement houses were liable to come in contact with were free from germs, and dirty floors were a common source of infection. Lastly, there was always the possibility that harmful germs might be inhaled from the air.

It was true, however, that when germs were contained in the food they were taken into the system in greater quantities than in any other way, and it was remarkable how quickly a few germs would render a large quantity of milk unfit for use. Thus, if half an ounce of contaminated milk were introduced into a gallon of pure milk, and the whole left in a sterilized vessel at the temperature of the body, in a short time the entire quantity of milk would be contaminated and filled with germs. He had never seen anything to lead him to suppose that the germs of summer diarrhœa were given off by the lungs and skin; but there was abundant evidence that

they were excreted from the intestines and kidneys. It was, therefore, highly important that the discharges of infants suffering from diarrhœa should always be promptly disinfected. Physiological investigations, he went on to say, showed that the digestion of milk was almost entirely carried on in the small intestines, the stomach having little to do with the process; and clinical observations confirmed the truth of this.

The third proposition was that the microörganisms which produce simple catarrhal or mucous diarrhœa are only putrefactive in character, but those which give rise to choleriform or serous diarrhœa are more than putrefactive, being essentially pathogenic. Dr. Vaughan does not believe in the unity of the microbic agents met with in all the forms of summer diarrhœa. The choleriform disease differed, he said, from the catarrhal in its symptoms and its pathology, and there was also good ground for regarding it as differing in its etiology. The poison of choleriform diarrhœa acted directly on the nervous system, probably more particularly on the sympathetic system, while in catarrhal diarrhœa there was merely a local irritation. A study of the bacteria met with went to show, therefore, that there was more than one affection comprehended in the general designation, summer diarrhœa of infants.

The fourth proposition was that the bacteria prove harmful by splitting up complex compounds and elaborating chemical poisons. With our present knowledge of bacteriology we expected to find the germ of each infectious disease capable of producing its characteristic ptomaine; and he was convinced that the ptomaine of cholera infantum was tyrotoxicon. While the germ producing this ptomaine had not as yet been identified, however, we knew something of its characteristics. Thus, it did not act below a temperature of 60° F., and it was anarobic. That tyrotoxicon was the ptomaine of cholera infantum was rendered highly probable by the symptoms and anatomical lesions produced in animals by this agent. The following are among the reasons, then, for regarding it as the ptomaine of the disease:

1. Tyrotoxicon results from the putrefaction of milk, and cholera infantum is almost entirely confined to milk-fed children and those subject to conditions favorable to the development of this ptomaine.

2. Tyrotoxicon has been found in milk taken by children just before an attack of cholera infantum.

3. The symptoms of the disease continue to increase as long as the administration of milk is kept up.

4. The symptoms of the disease are identical with those produced in animals by tyrotoxicon.

5. The post-mortem results are also identical.

The fifth proposition was that the most efficient treatment will consist in giving attention to the preparation of food, the methods of feeding, and the sanitary surroundings of children under the age of 2 years. There could be no doubt of the fact that the infant digests the milk of the mother or wet-nurse better than cow's milk. It was also a fact that mother's milk contains more fat than the child could utilize. Artificially fed infants were more likely to be overfed than those which were nursed, because in the case of the latter the supply of nourishment was limited and not so easily obtained. This overfeeding rendered the child more subject to harmful influences, and the proteids taken into the system which could not be assimilated were constantly liable to contamination by bacteria. Dr. Vaughan then went on to say that he objected to complete artificial digestion of food, 1, because, if this was continued for any length of time, the digestive organs would become permanently enfeebled, and 2, because the too rapid absorption of peptones was injurious. The long-continued use of artificially digested food was, therefore, irrational and unscientific. In order to protect children as far as possible from the danger of cholera infantum, great care was necessary in the preparation of their food, and he had elsewhere laid down certain rules for the preservation of milk which seemed to him of service towards this end. As to the need of attention to the sanitary surroundings of infants he thought it was scarcely requisite to say anything on this occasion, as all were so fully alive to its importance.

The sixth proposition was that, in the curative treatment, the destruction of the bacteria which are causing the abnormal fermentation is essential. How, then, could this destruction be accomplished? One of the surest methods of destroying the life of any plant or animal was to completely withhold its food supply. A radical change of diet, consisting of the entire exclusion of milk, and the substitution for it of a meat diet, was, therefore, one of the most certain methods of relieving the system of these deleterious bacteria, and curing the disease due to their presence. He had found that if contaminated milk was added to beef-tea or to egg-albumen, and the liquid then left in sterilized vessels at the temperature of the body, the number of bacteria did not increase; thus showing that they could no longer produce their chemical poison, tyrotoxicon. In milk, however, these bacteria found the most favorable conditions for their development and the production of their ptomaine. In summer diarrhœa, and especially cholera infantum, the withdrawal of all milk from the child was, therefore, of the greatest importance.

In addition to this change of diet, various antiseptic agents might be employed in the treatment; and in order to discover which were the most efficient, Dr. Vaughan had made a series of experiments for the purpose of testing the action of different germicides, or supposed germicides, on

tyrotoxicon; the drug under experiment being introduced into a bottle containing milk and the poisonous ferment. In this way he ascertained that 1 part of bichloride of mercury to 2,400 parts of water was efficient in neutralizing the poison. One part of naphthalin to 200 parts of water was wholly without effect, while 1 part of sodium salicylate to 200 parts of water was efficient. It seemed probable, in the latter case, that the constituents of the salt became separated, and that salicylic acid was in reality the active agent. Resorcin, in the proportion of 1 part to 200 of water, was likewise efficient, but was inefficient when used in a weaker solution than this.

Dr. Vaughan's paper was followed by one from Dr. W. D. Booker, of Baltimore, on the *Microorgarisms of the Stomach and Intestines in Summer Diarrhœa*, in which he stated that since he read his paper on this subject before the Section of Diseases of Children of the Ninth International Medical Congress he had discovered several new forms of bacteria; so that he had separated in all twenty-three varieties from the dejecta of nineteen children suffering, with one exception (a healthy infant), from diarrhœal diseases. Many of the varieties, however, bore a close resemblance to each other, both morphologically and biologically. Having described the microscopical changes and the changes in color produced by the introduction of the various bacteria into pure milk and milk mixed with bile in large and small quantities, he stated that none of the varieties produced diarrhœa in animals, although some of them had other toxic effects.

Dr. L. Emmett Holt then read a paper describing the *Microscopic Appearances of the Stomach and Intestines in Summer Diarrhœa*. His observations included eighty-two cases, which he divided into the following three classes: Those in which the disease lasted four days, or less; those in which it lasted from four to ten days; and those in which it lasted over ten days, the latter constituting fully one-half of all the cases. He then went on to describe in detail the microscopical appearances in the three classes of cases, which were illustrated by a number of carefully prepared plates, and which went to show that the longer the disease lasted the more profound were the pathological changes in the tissues. In the third class, then, often deep ulcerations, and severe character of the lesions in general, clearly indicated why it was that in protracted cases relapses were so apt to occur, and how necessary local treatment was for the cure of the intestinal ulcerations.

The chairman of the Section, Dr. J. Lewis Smith, having read the report of the microscopical appearances noted by Professor Wm. H. Welch in a case which had occurred in his service at the New York Infant Asylum, gave the results of an investigation made at his request, by a well-known chemist, of the relative *digestive power of the various brands of pepsin* now in the market. The same chemist, he said, had also made a series of experiments for the purpose of ascertaining what effect, if any, the different germicidal agents now coming into vogue in the treatment of summer diarrhœa had on the process of digestion; and it was a point of some practical importance to know that these agents do not appear to retard digestion to any extent that would lead us to hesitate on this account to employ them.

Dr. A. Caillé said that the practical outcome of the evening's discussion was about as follows: If we admit the bacterial origin of the summer diarrhœa of infants we must admit that its principal cause is to be found in milk; and if this is acknowledged, we are forced to the conclusion that the ordinary methods of preparing and preserving milk are altogether faulty. At the February meeting of the Section on Pediatrics he had called attention to the apparatus devised by Dr. Soxhlet, of Munich, by means of which the preparing and feeding of sterilized milk can be readily carried out in every family. Since the February meeting a New York firm, at his suggestion, had prepared an apparatus (which they were now ready to supply in any desired quantity) similar to that of Soxhlet, consisting of a tray holding ten feeding-bottles with combination stoppers, and a pot to boil them in. These, together with extra bottles, rubber nipples, a cleaning-brush and a tin dipper for warming the milk immediately before feeding, were all packed in a box ready for transportation. In using the apparatus each bottle is filled to one-half inch of its neck with the food, properly prepared in accordance with the age and condition of the infant, and a perforated rubber stopper pressed well into the neck of the bottle. The bottles are then set in the tray, and the tray in the pot containing water up to the neck of the bottles, and the water is brought to the boiling point. After the water has boiled for ten minutes each bottle is hermetically closed by pressing a glass stopper down through the perforated rubber stopper. When the boiling is continued for ten minutes longer the tray is lifted out and set aside to cool; after which it should be kept on ice or in a cool place until all the milk has been used. Milk prepared in this way can be kept sweet and pure for any length of time required.

The apparatus, Dr. Caillé said, could be purchased for $4, but as this was probably too expensive for the poor, he would recommend that a mother who was unable to buy one should get six or eight bottles provided with the combination stopper, and boil the milk for her infant (as prepared for use) in them.

Dr. J. E. Weeks said that a year ago he had made a series of experiments in regard to the action of different agents on the pus germ. He found that salicylate of sodium was inert, while salicylic acid was actively germicidal; and he be-

lieved, therefore, that Prof. Vaughan was right in concluding that in his own experiments the salt became changed, and that its germicidal value was really due to the salicylic acid that was liberated. Naphthaline he found germicidal in rather strong solutions, while bichloride of mercury stood rather high. Nitrate of silver also stood high.

In bringing the discussion to a close Dr. Vaughan said that in his own experiments it was probable that the lactic acid present set some of the salicylic acid free from the sodium salicylate. In Dr. Weeks' esperiments, there being no such agent present, the salt would naturally remain unchanged. As to the practical use of germicides in the treatment of summer diarrhœa, the dose of the bichloride of mercury required would be about one-twenty-fifth of a grain, and as this seemed rather large for young infants, it would no doubt be safer to give five grains of salicylate of sodium, which according to his tests was the dose this agent required for the purpose desired.

Dr. Smith having inquired whether it was a fact, as supposed by some, that calomel was changed into the bichloride of mercury after being taken into the system, Dr. Vaughan replied that this was undoubtedly the case with a certain proportion of the amount taken, and it was probable that the change was especially likely to take place when the calomel was given in small doses.

P. B. P.

SHALL I REMOVE TO THE CITY?

Dear Sir:—In May or June the practice of the country physician grows light and a needed rest is enjoyed after the arduous labors of the early spring. Then the doctor gets his books posted, makes out his birth and death reports, brushes up his office and musters courage to present some of his bills.

He remembers that tradesmen have presented their bills to him with commendable promptness and wonders why the medical profession alone conducts business in such a lax and unbusiness-like manner.

After familiarizing himself with the appearance of a statement in which he is creditor he concludes it will not ruin his business to send out a few of these statements by mail. The first lot are probably sent to long-time delinquents who have found it cheaper to change doctors than pay up. Next the doctor meets a man on the street and reminds him that it is time to settle, and with the account in his pocket, perhaps, he asks him to the office to see how much it is. After he has made a few collections and feels less like a pauper he puts on a bolder front, begins in earnest, and as the exchequer is replenished the tired feeling he thinks he has had so long, wears off and "Richard is himself again."

Now it is time to attend some of the annual society meetings. The County District, State or National Medical Associations are in session and the doctor, from interest in the work and want of recreation, goes to the city.

Meeting the city physicians with their apparent advantages of being in the range of medical colleges and hospitals and the city societies in which interchange of ideas among the best of the profession enlarges medical skill, the strong temptation comes to remove to the city. The ease with which professional work is done stands out in marked contrast with the drudgery in mud and rain through which the country doctor has just passed. The greater social advantages, the better fees and the possibilities of specialty practice all conspire to tempt the ambitious young man almost to the point of yielding.

Wealth is concentrated in the cities. The best price is paid for goods of the best quality there. The successful merchants of the towns frequently go there to recruit the ranks of city merchants. The best ministerial talent is called there at an increased salary. Why should not the doctor go? Obviously we cannot all go, and it is the city's immense advantage that we cannot. A great many do go from the larger towns throughout the country and the eminence of a few attest the wisdom of the change for them. Where the ambition that spurred them on was based on superior judgment and a degree of skill commensurate with the years of study and experience, success has crowned their efforts. Of the multitude of failures we hear nothing. With the physician, however, as compared with the case of the merchant or minister there is a great difference. The merchant uses his acquired capital, gets a good location and stock, and a few page advertisements puts his business on a self-sustaining basis.

The minister called to the city has his congregation as a constituency awaiting him, and a church reception makes him at home among his people.

The doctor may have a reputation at his present place, but it has the faculty of staying close home. His work in the journals or societies may have made his name familiar to the best of his city co-workers, but it is not their special province nor care to introduce him to the people, the source of his expected income.

Privilege to advertise cannot help him, already quacks enjoy that and are adepts in its use; and the abandonment of the time-honored regular methods would be a damaging confession. The new doctor in the city then must begin at the bottom and go through the drudgery of building up a business anew with no advantage over the new graduate except so far as his savings, his experience and acquaintance may help him to a comfortable location and professional standing. In the vast majority of cases, had the doctor not

better avoid the city? He who succeeds in the country or larger towns can do still better than if his ambition impels him to improve his business. He can have the world for an audience if he has anything of universal interest to say. If he desires it he can extend his field of labor almost indefinitely if there is anything he can do better than his professional brethren. His expense account may usually be smaller than that of his city friend in proportion, as his town is smaller.

The out-door work which is often a ground of complaint may perpetuate a vigorous physical state that a city office might ruin. A family vigorous in the free air of a country-home may suffer in bodily health, possibly in moral tone, from the different atmosphere of the city.

Years of acquaintance and established business enable the country physician to select his cases and avoid the most laborious work, except where compensation is adequate. The years he has spent, instead of being virtually lost through removal, constitute so much capital which shall contribute to his comfort and gain as the years go by; and judicious investments made in the years of prosperity obviate the need of hard work in old age.

In the more varied demands of the country practitioner more study is required to cover the larger field of work, but by way of compensation has he not the consciousness of being a more useful member of his community?

COUNTRY DOCTOR.

MISCELLANEOUS.

THE RAINS COUNTY (TEXAS) MEDICAL ASSOCIATION was organized on June 20, with Dr. J. F. Bertram, of Yantis, President, and Dr. E. A. Swepston, of Point, Secretary.

THE KENTUCKY STATE MEDICAL SOCIETY met at Crab Orchard Springs on July 11, 12, and 13. Dr. L. S. McMurtry, of Danville, is the President for the ensuing year.

THE TEXAS MEDICAL COLLEGE AND HOSPITAL has been organized at Galveston, and it is thought that it will open in October. It will require three year's study and three full courses of lectures.

THE MEDICAL AND SURGICAL SOCIETY OF WESTERN ILLINOIS will hold its next regular meeting in the Court House at Jerseyville, Wednesday, August 1. Morning session 10.30; afternoon at 1.00 o'clock.

DR. CHARLES W. PURDY, of Chicago, was married to Miss Florence Elise Hoffman, daughter of Mr. George W. Hoffman, of Oak Park, Ill., on Tuesday evening, July 24, at Grace Episcopal church, Oak Park.

AT THE COMMENCEMENT EXERCISES of Union College, June, 1888, the honorary degree of LL.D., was conferred upon Mr. Lawson Tait, F.R.C.S., Professor of Gynecology, Queen's College, Birmingham, England.

THE AMERICAN RHINOLOGICAL ASSOCIATION will hold its sixth annual meeting at Cincinnati, on September 12, 13 and 14, 1888, under the Presidency of Dr. C. H. von Klein, of Dayton, O. The subjects for discussion are: Etiology and Pathology of Nasal Diseases; Relation of Nasal Diseases to other Diseases, including the Brain and Nervous System; Treatment of Nasal Diseases by Local and Constitutional Medication; Treatment of Nasal Diseases by Surgical Means; and Hay Fever (Pruritic Rhinitis), Pathology and Treatment. A large number of papers will be read on these subjects.

AMBULANCE INSTRUCTION FOR RAILWAY MEN.—The Mayor of West Ham recently presented certificates and badges of the St. John Ambulance Association to fifty-three *employés* of the Great Eastern Railway at Stratford. During the winter two courses of instruction were given at Stratford by Dr. Louis Parkes, medical officer of the Great Eastern Railway Accident Fund, special attention being given to practical bandaging work. Over 4,000 men are employed by the railway company at their Stratford Locomotive Works, and the advantages of having certificated men amongst this number to render first aid in cases of accident are highiy appreciated, both by the railway authorities and by the men themselves. It is very desirable that a proper ambulance corps should be formed in these large works.—*British Medical Journal*, July 7, 1888.

NEW BOOKS RECEIVED.

The Goulstonian Lectures on Insanity in Relation to Cardiac and Aortic Disease and Phthisis, by William Julius Mickle. Publisher, H. K. Lewis, London.

The Applied Anatomy of the Nervous System, by Ambrose L. Ranney. D. Appleton & Co., New York.

A System of Obstetrics by American Authors. Edited by B. C. Hirst. Vol. I. Lea Brothers & Co., Philadelphia.

Practical Electro-Therapeutics, by Wm. F. Hutchinson. Records, McMullin & Co., Philadelphia.

Physicians' Leisure Library, No. XI. The Disorders of Menstruation, by E. W. Jenks. Published by George S. Davis, Detroit.

The Ethics of Marriage, by H. S. Pomeroy. Prefatory Note by T. Addis Emmett, and Introductory by Rev. J. T. Duryea. Funk & Wagnalls, New York.

Die Stielbehandlung bei der Myomotomie. Von Dr. Paul Zweifel. Stuttgart: Ferdinand Enke. 1888.

Official List of Changes in the Stations and Duties of Officers Serving in the Medical Department, U. S. Army, from July 21, 1888, to July 27, 1888.

Thomas A. McParlin, Surgeon U. S. Army, leave of absence extended one month. Par. 10, S. O. 160, Dept. of the Platte.

Surgeon William D. Woolverton, U. S. Army, leave of absence extended twenty days. S. O. 142, Hdqrs. Div. of the Atlantic.

Asst. Surgeon Joseph K. Corson, U. S. Army, leave of absence for one month, with permission to apply for an extension of one month. S. C. 78, Hdqrs. Dept. of the Columbia, Vancouver Bks. W. T., July 13, 1888.

Capt. William B. Davis, Asst. Surgeon U. S. Army, will proceed to Ft. Niagara, N. Y., for the purpose of completing his target practice for this year with Company C, Twenty-third Infantry. Upon completion of this duty Capt. Davis will return to Ft. Porter, N. Y. S. O. 145, Hdqrs. Div. of the Atlantic, Governor's Island, New York City, July 17, 1888.

First Lieut. Leonard Wood, Asst. Surgeon, U. S. A., is relieved from duty at Ft. Huachuca, Ariz. Ter., to take effect at the expiration of his present leave of absence, and will report to the commanding officer at Ft. McDowell, Ariz. Ter. Par. 14, S. O. 162, A. G. O., July 14, 1888.